ARIZONA
THE WONDERLAND

GEORGE WHARTON JAMES

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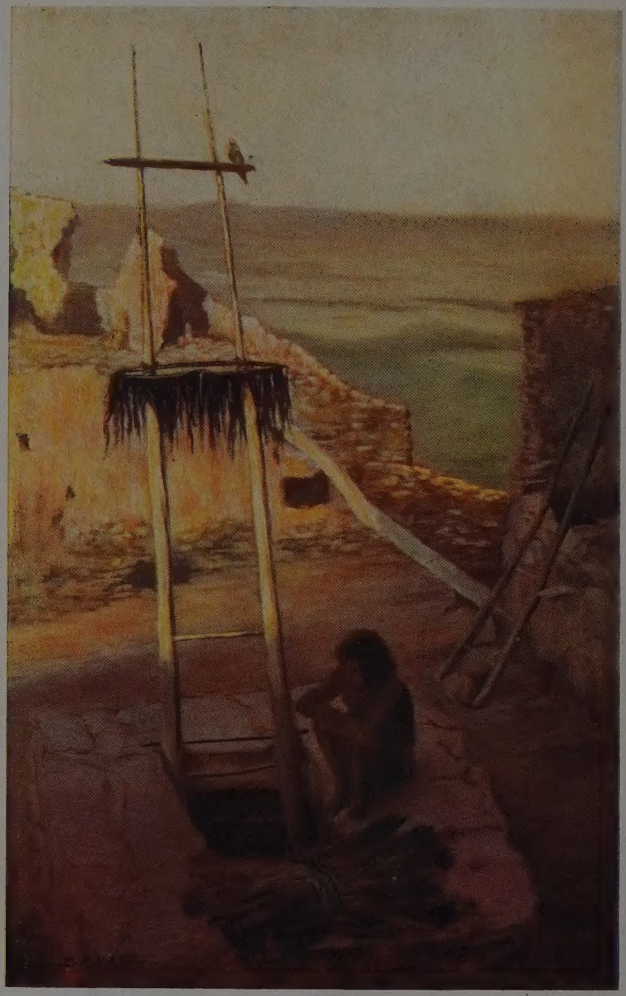

The Prayer at Dawn on the Morning of the Hopi Snake Dance, Arizona.

From a Painting especially made for this work by Eva Almond Withrow.

(See page 82.)

ARIZONA

THE WONDERLAND

The History of its Ancient Cliff and Cave Dwellings, Ruined Pueblos, Conquest by the Spaniards, Jesuit and Franciscan Missions, Trail Makers and Indians; A Survey of its Climate, Scenic Marvels, Topography, Deserts, Mountains, Rivers and Valleys; A Review of its Industries; An Account of its Influence on Art, Literature and Science; and some reference to what it offers of delight to the Automobilist, Sportsman, Pleasure and Health Seeker.

BY

GEORGE WHARTON JAMES, 1858 - 1923.

Author of

"California, Romantic and Beautiful," "Indian Blankets and Their Makers," "Our American Wonderlands," "The Wonders of the Colorado Desert," etc.

With a map and sixty plates, of which twelve are in colour

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BY WAY OF FOREWORD

ARIZONA was termed the "Wonderland of the Southwest" many years ago, by one who knew it as few moderns ever get the opportunity to know it, viz.: by tramp and saddle, hunting Apaches and other Indians when they were on the warpath. One of the fascinating books on Arizona is *On the Border with Crook,* written by Captain John G. Bourke, and it is where he describes the good-byes of Crook, after he had practically subjugated the Apaches, in 1875, that he uses the term.

"Crook bade farewell to the people for whom he had done so much, and whom he always held so warmly in his heart; he looked for the last time, it might be, upon the snowy peaks of the San Francisco, and then headed westward, leaving behind him the Wonderland of the Southwest, with its fathomless Canyons, its dizzy crags, its snow-mantled Sierras, its vast deserts, its blooming oases — its vast array of all the contradictions possible in topography."

Go to the National Museum in Washington, and I venture the assertion you will find there more objects of universal interest and wonder *gained from Arizona,* than from any other country you can name. It is the same at the Field Columbian Museum, in Chicago; the Carnegie Museum, in Pittsburg; the Museum of Natural History, in New York; and Arizona has also made a large and ineffaceable mark upon the great collections in the British and German Museums of London and Berlin.

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These collections, however, deal largely with Arizona's past, or the wonderful families of Indians found today within her borders. Yet her claim to being *the* Wonderland of the United States is not limited by what these museums possess. She plays upon a far wider gamut of emotions than these few strings afford. Her mines have been, and still are, the wonder of the world, and her developments in modern irrigation are equally wonder-provoking. In her changes of character during the past half century Arizona is remarkable.

Fifty, forty, thirty, aye, twenty or less years ago, Arizona was a name suggestive of hell-roaring mining camps; fierce, vindictive, treacherous Apaches and other Indians; "gun-men"; and all the other manifestations of the "wild and woolly West." Tourists from the East, and elsewhere, returned to their homes and spoke of the wild license of Arizona — the gambling, the saloons that, once opened, never closed day or night, week-day or Sunday, holidays or feast-days from January 1st to December 31st. They told of the saloon-signs they saw, such as the one in Williams which announced that "All Nations, except Carrie, are cordially welcomed"; of the dance halls, where shooting affrays were far from uncommon, and gambling dens, where faro, roulette, and all the games of chance were perpetually running.

Such names as cowpuncher, horse-wrangler, mule-skinner, bull-whacker, woolly-coddler, grub-line rider, tin-horn gambler, were heard on every hand, and it was a common sight to see a herd of cowboys ride wildly into the main street of most of the towns, dash up to the nearest saloon, proceed to drink up all the rot-gut whisky, and other vile nose-paint and brain-destroying liquors available, and then proceed to shoot up the town!

Let any one attempt anything of this kind today — what would happen? He, or they, would be under arrest in ten minutes, and a sentence in the bastile would be apt to curb their unrestrained and licentious freedom. Arizona is a prohibition state; the open saloon is abolished; Oatman, the latest booming mining-camp in the United States, is a camp that literally has not known the sale of liquor; every "gun-man" that is known is compelled to leave his "gun," or "shootin'-irons," with the sheriff; and public gambling is under a cloud. Arizona leads in sociological progress. Whatever may be said against her first governor, George P. W. Hunt, there can be no denying the interest of his experiments and adventures into the realm of prison-reform and the abolishment of capital punishment.

Arizona is young and daring. She is not tied to precedent, to convention, to other states' ways of doing things. With the Hindu Tagore, she exclaims:

"Where roads are made I lose my way.
In the wide water, in the blue sky, there is no line of a track."

She is bent on making her own ways, and *in her own way*. Her mistakes will be her own, and her triumphs likewise.

I can foresee the possibility that those who have read my previous book, *California, Romantic and Beautiful,* may wonder that *this* book is as full of enthusiasm as was that. Why not? The reason is not far to seek. I know Arizona as well as I know California, indeed, I have *studied* it much more. While California is my home, I have visited and rambled over almost every part of Arizona, returning nearly every year for the past thirty years. No one can know Arizona and not have his enthusiasm aroused. It is just as alluring as is

California, but in different ways. Its climate is marvellous and is wonderfully varied, yet very different in some respects from that of California; its remarkable topographical contrasts are as striking as those between the deserts below sea-level and the mountain summits of California; its history and Indian lore are far more fascinating; its Indian life and ceremonies more astounding and thrilling; its geology more striking and gripping than anything of the kind in California; and its Grand Canyon and Petrified Forest, Canyon de Chelly, Tonto Basin, Apache Trail over the mountains, are equally awe-inspiring, soul-awakening and mind-staggering as the Yosemite, Hetch Hetchy and Kings and Kern River Canyons in California.

Indeed, I may as well confess here and now, as well as later, that the whole of the Great West — not only the Southwest, but the West — from Montana, Wyoming, Colorado and Texas on the north, east and south to the Pacific Ocean, taking in Idaho, Washington, Oregon, Utah, Nevada, New Mexico and Arizona, as well as California, are all countries of my love. They all awaken my enthusiasm. Were I a poet I should sing their praises continually and in as exuberant, unrestrained, and spontaneous fashion as the mocking-bird and English sky-lark sing their songs. To me they are the land of hope and promise, of freedom and expansion for body, mind and soul, of great-hearted, daring men and equally great-hearted, whole-souled women, capable of fathering and mothering the new race that is to save our Occidental civilization from annihilation. For it does not take half an eye to see that the conflict is already shaping, the real Armageddon; not a physical struggle for the possession of territory, but the *mental* and *spiritual* battle, as to who shall domi-

nate the world. Force — the force of guns and armaments may rule for awhile, but there never was truer word said than that of Christ when He declared: "The meek shall inherit the earth." And by meek I take it are meant those whose trust is not in physical force, but in the dominating power of the Spirit. This power is growing with great rapidity in the West. The boundless prairies incite to expansive thoughts; the deep canyons to a more penetrating vision into oneself and one's fellows; the deserts to a purification of one's desires; the soaring mountains to the higher uplift of one's soul. I firmly believe, therefore, with the "Poet of the Sierras," in that which he says in his prelude to "The Ship in the Desert":

"A wild, wide land of mysteries,
Of sea-salt lakes and dried up seas,
And lonely wells and pools; a land
That seems so like dead Palestine,
Save that its wastes have no confine
Till push'd against the levell'd skies.
A land from out whose depths shall rise
The new-time prophets. Yea, the land
From out whose awful depths shall come,
A lowly man, with dusty feet,
A man fresh from his Maker's hand,
A singer singing oversweet,
A charmer charming very wise;
And then all men shall not be dumb.
Nay, not be dumb; for he shall say,
'Take heed, for I preface the way
For weary feet.' Lo! from this land
Of Jordan streams and dead sea sand,
The Christ shall come when next the race
Of man shall look upon His face."

In this book, too, as in my *California, Romantic and Beautiful,* it will be observed that I have quoted a great deal from the writings of those who have felt the in-

spiration of Arizona to literary expression. Kinship is not always of the blood. Many a man has had an adopted son or daughter, who was far more his own child than one who sprang from his own loins and boasted his "blood." He is truest Arizonan who is most at one with it. Helen Hunt Jackson was far more a Californian when she wrote *Ramona* than any native son or daughter California has yet given to the world of literature. So is it with Arizona. He who has absorbed, grasped, realized its spirit, and given expression to it, is, so far, a son of its spirit if not of its soil. And I have quoted largely from such for two purposes: One: to show how wonderfully Arizona has influenced to graphic and powerful expression — in other words, to the production of pure literature; and two: that the reader may enjoy, in other words than my own, the delights others have felt in gazing upon the scenes that have so charmed, fascinated and allured me.

One of the strikingly remarkable things about Arizona is that its power of inspiration never seems to grow any less. It inspires, and continues to inspire, and the latest to succumb are fired to expression as exuberant, as buoyant, as enthusiastic, as if others had not felt exactly the same ten, twenty, fifty or more years before. In the year of our Lord 1913, or 1914, or thereabouts, came Agnes C. Laut, Charles Frederick Saunders, Theodore Roosevelt, even, and regardless of the fact that Bourke, Lummis, Garland, Dorsey, Hough, Fewkes, and a score of others, a score, more or less, of years before, had described the Hopis and their Snake Dance, the Grand Canyon, the Cliff Dwellings and other Arizona attractions, gave to the world their exuberant expressions of delight, wonder and fascination as if they were being seen and described for the first time.

This is a wonderful quality. It is a marvel of life: this quality of never losing its charm, never growing old; this ability to inspire new affection and devotion in each new generation, equal to that felt by those of the past. To me it is an omen and a prophecy. It tells a fact of today and also of tomorrow. It speaks of the growing popularity of Arizona when it is better known. The charming bride, who preserves her devoted admirers long after she has a large family growing up around her, adds to her circle the more she is known. So will it be with Arizona. She has attracted, she is attracting, she will continue to attract in increasing ratio. Here lies the assurance for her growing prosperity, the enlargement of her commerce, the increase of her population, the widening of the sphere of her glorifiers in literature and art. Thousands who today are toiling and moiling in the cramped-up life of the cities would speed, with joy unspeakable, to the great wide, free, open life of God in the mountains, forests, plains, canyons, valleys of Arizona if they but knew what they would find there.

If they but knew!

They are going to know. The Fate Bells ring as soon as their time is announced, and we who know, have already seen the signal given that the bells of Arizona shall ring. The melodious sounds have already begun, but the chorus is not yet at its full. When it is, the vibrating peals will cross the Continental Divide, strike the highest summits of the Rockies, and echo and re-echo over the prairies and plains, until they reach the undulating slopes of the Adirondacks and Alleghanies, over which they will descend to the Atlantic until the whole land will rejoice in the wonders of Arizona, as it has hitherto rejoiced in those of California.

And the marvel of all this is that it will provoke no jealousy, no irritation, no petty spirit of envy. California will be glad of the triumph of her younger sister. She will join in the song that will follow the pean of the bells, and will rejoice at the homage paid to the new bride of her blood. Thus the Spirit of the West, that great, free, frank, open, stimulating, expressive, living, God-given Spirit, will spread, and grow and bless mankind, and Arizona will become one of the potent aids in spreading that which shall help redeem the world.

"But," says the *practical* reader, "you have enthused only over the past, the scenery, the climate, the wonders of Arizona. This is a *practical* age. Modern men and women can't live on history, on climate, on relics, no matter how interesting, how wonderful. We need opportunities for financial investment, for home building, for the raising of families, for agriculture, for *everyday, ordinary, modern life.* Has Arizona anything to offer in those lines?"

Little should I have accomplished my purpose had I failed to show with equal enthusiasm and graphic power that Arizona is a land of the *Now,* and of the *Future,* as well as of the Past. The Modern Arizona is a young bride with beauty, grace, vigor and perfect health, married to Progress, who is a fit partner for her, in his culture, refinement and loving devotion. Trained in the modern school of eugenics, they are already anticipating and preparing, nay, yearning for the children that are to come to them,— villages, towns, cities, manufactories, laboratories, workshops, schools, colleges, churches, and theatres, each and all endowed with the graces, virtues and powers that ought to belong to children of such parents.

The awakening of Arizona has actually taken place.

First-class hotels are already built — only a few, as yet, but more are being planned, for the entertainment of the widely-traveled and exacting tourist; the "cities" are no longer wild frontier towns of the *Wolfville and Arizona Night's Entertainment* type; or the farms and orchards the projects of dreamers. The fact that the experts of irrigation and agriculture of the Federal Reclamation Service expended their highest energies and most elaborate plans on two irrigation and cultivation projects for Arizona, and that hundreds of men are now successfully and profitably farming thousands of Arizona acres, demonstrates beyond cavil that this is a more than usually God-blessed region for the general farmer, the fruit and vegetable grower. The finest cotton in the world is produced here, with Indians, even, as farmers and pickers. Dates as rich and luscious as any from the Persian Gulf are being picked yearly. Oranges and grape-fruit develop a sweetness and richness of flavor, and ripen so early that they are marketed and sold before I am able to enjoy an orange from my own trees in highly-favored Pasadena.

In the cities women have their clubs, reading circles, and activities in church, home, and society, as well organized as in any western city from Chicago to San Francisco; there are all the advantages of education from the kindergarten to the university, and with such modern buildings, lavish and up-to-date equipment as make *some* of the schools of Arizona not only the peers, but the superiors, of *some* of the schools in New York City. And I am familiar with both. The University of Arizona is growing. It, and its allied educational institutions, are in the hands of exceptional and progressive men. At the recent "inaugural" of the new president, representatives whose names are world-famed

came from all the leading universities of the country, and from federal institutions, and he and his staff of professors did not suffer one whit in the searching and brilliant comparison. The marvellous climatic conditions of Arizona led one of the most far-seeing and prophet-visioned botanists of the world to urge upon Andrew Carnegie the establishment of a botanical laboratory here, and the results are already proving such a widening, broadening and deepening of our botanical knowledge as old-time scientists never dreamed of.

With but one exception — the ocean — Arizona has everything that has rendered California so world-famed, with the addition of many scenic, geologic, ethnologic and archaeologic features that California does not possess. Her reach of climate is almost as varied as that of California; from snow-clad peaks the year around to scorching desert; from humid forests to plateaus and plains where the hygrometer registers the minimum of moisture. In the summer her White Mountains are as alluring, as fascinating, as enchanting, as delicious to the senses, and far more romantic because of their Indians, as their namesakes in New England. Here are trout-streams, wild-turkey runs, deer and antelope ranges, and bear resorts to delight the heart of the hunter, while in the quiet woods, by bubbling brooks, in wild-flower dells, up meandering trails, the reflective, contemplative Nature-lover finds strength for the body, repose and serenity for the mind, and joy for the soul. Nor is the White Mountains the only Arizona spot of elevated delectation. Though many travelers may lift up their eyebrows in question, there are more really delectable mountains in Arizona than in all New England and New York combined. The Sierra Anchas, the Mogollons — pronounced locally *Mo-go-yones* — the San Franciscos,

the Wallapais, the Estrellas, the San Tans and a dozen others all have wooded slopes, well-watered canyons and far-reaching pastures for the joy of man and beast.

For a comparatively new country Arizona is remarkably well provided with railways. The Santa Fe crosses it from east to west in the north, and the Southern Pacific on the south. Connecting these two transcontinental lines is the Santa Fe, Prescott & Phœnix (an integral part of the Santa Fe). On the south, coming into the state near Douglas, on the border, is the El Paso & Southwestern, which, with its eastern connections with the Rock Island, and its western connections with the Southern Pacific, is practically another transcontinental line. The Santa Fe also has another western outlet in the branch from Wickenburg, *via* Parker, to Cadiz, on the main line. It also has the line from Williams to the Grand Canyon and several shorter branches which reach various mining regions. The Arizona and Eastern is a subsidiary of the Southern Pacific and forms the connecting link between Maricopa and Phœnix, and Bowie and Globe, while branches of the main line connect Tucson with Nogales and this with the whole west coast of Mexico, and Benson with Nogales through the rich Santa Rita mining country.

In its automobile roads Arizona is both fortunate and progressive: fortunate in that its native roads are remarkable (in the main), owing to the gravelly nature of much of the soil; progressive in that, considering the comparatively small population its vast territory possesses, it should yet be expending millions upon the improvement of its roads, the building of bridges, the engineering of fine highways over its mountains, and the general improvement of the native roads where they are

not reconstructed. Except in very bad weather, there are few roads in Arizona that will not average up with those of the most populous and progressive of the states of the Middlewest.

Arizona is a state of vast proportions. Its superficial area is 113,956 square miles of which 113,840 is land and one hundred and sixteen water. On the other hand, while California has 158,297 square miles of land, it has two thousand two hundred and five square miles of water surface. Florida, with only 58,861 square miles of land, has 3,805 square miles of water. Hence, Arizona is regarded as an arid land. To the indifferent and casual observer this is true, but the careful mind sees many things that the indifferent one never notices. Arizona is at a remarkably high level: that is, its level above the sea is much above the average. While in the Yuma quadrangle the levels vary from one hundred and thirty-eight feet at Yuma to two hundred and fourteen feet at Araby, they reach six thousand, nine hundred and fifty-nine feet at Supai, a small telegraph station on the Santa Fe Railway between Williams and Ashfork, and seven thousand, five hundred and seventeen feet at Shinumo Camp, on the Kaibab plateau, and six thousand, eight hundred and sixty-one feet at El Tovar Hotel at the end of the Grand Canyon railway. Then, when it comes to mountains Arizona, as I have already shown, has many surprises in store. She has a good number of peaks over 10,000 feet high, and these receive a large share of rain-fall in the summer and snow in the winter, which, if conserved, and not allowed to flow out and become lost in the desert sands, would serve to irrigate many hundreds of thousands of acres.

In the chapter "Glimpses of the Land" a few suggestions of Arizona's rich variety of scenery are pre-

sented, but the variety is not more rich than the soil is found to be in many localities, when irrigated.

Everybody that has traveled to California on the line either of the Santa Fe or the Southern Pacific, will recall that Arizona is the last country crossed ere the Golden State is reached. On each railway, the Colorado River is the boundary line, on the former at Topock, twelve miles before reaching the town of Needles, California, and on the latter at Yuma, Arizona. The boundaries of the state are, on the east, New Mexico; the north, Utah as far as the Grand Wash, where the Colorado River makes its great bend and becomes the boundary circling around to the northwest, west and south, thus making the western boundary, dividing Arizona from California. Its southern boundary is Mexico.

In concluding these introductory remarks I must not fail to note that: This is not a book of hearsay, of stories, of imaginings. I have personally seen everything herein described, and in nearly every case, wrote the descriptions *on the spot*. The scenic wonders; the cliff dwellings and other prehistoric ruins; the Indians; their ceremonials; their picturesque homes; the deserts; the thrilling trails; the automobile roads over mountains and through richly cultivated lands, deserts and cactus-clad wilds; the irrigation systems of the U. S. Reclamation Service; the wonderful agricultural and horticultural developments; the date, orange, grape-fruit, peach, apricot, and olive orchards taking the place of the cactus, yucca, mesquite, ocotilla and creosote bush; the extension of railways and the building of state roads; the growth of cities, modern, progressive and cultured — all these I have seen with my own eyes.

So many good friends have helped me in the preparation of this book that it has growingly become to me

a proof of the devotion of many Arizonans to their state and of specialists to their respective departments of science. No one has been appealed to in vain. President Von KleinSmid, Dr. H. R. Forbes, Director of the Experimental Stations, Professors Douglass, Willis, Byron Cummings, Thornber, and Miss Estelle Lutrell and her assistants at the Library of the Arizona State University, Col. and Mrs. J. H. McClintock of Phœnix, Mr. W. H. Robinson of Chandler, Professor Joseph Grinnell, and Miss Wythe of the Museum of Vertebrate Zoology of the University of California, Harry S. Swarth of the Los Angeles Museum of History, Science and Art, and Mrs. J. H. Wheeler of Tucson, have all given special aid.

I have also received much help from Mrs. Margaret Armstrong's *Field Book of Western Wild Flowers,* and from the files of *Arizona,* a complete set of which were placed at my disposal by C. S. Scott, the editor. Most of the secretaries of the Chambers of Commerce throughout the state, and Dr. George Otis Smith, Director of the U. S. Geological Survey; Dr. F. W. Hodge, Director of the Bureau of North American Ethnology; Dr. Herbert E. Bolton, of the University of California, without doubt the greatest living authority upon the documentary history of the Southwest, have been kindly helpful, and to them all I tender my sincerest and heartiest thanks.

If my readers enjoy reading as much as I have enjoyed writing this book, and if it bring a larger knowledge to others as to what Arizona actually is, its object will have been fully attained.

George Wharton James

Pasadena, California.

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ARIZONA,
THE WONDERLAND

CHAPTER I

GLIMPSES OF THE LAND

FEW countries in the world present so marvellous a variety of scenic features as does Arizona, the Wonderland. From this standpoint alone Arizona could well claim to be a wonderland, and none who knew it would have either the temerity or the mendacity to deny its claim. Drop upon it where you will, it is wondrous, marvellous, astounding, even thrilling. Let me just name at random a few of the thrilling, the really awe-inspiring, majestic, sublime scenes found within the borders of this, the youngest of the American States, and yet one of the oldest lands of the whole continent. Let an imaginary aeroplane bring us over the desert, a few miles after we have crossed the Colorado River from California into Arizona. What a wonderland of wild cactus growth, of solitude, of mystery, of silence it is! Here grows the mystic smoke-tree — that many a wanderer takes, in the fading light of evening, for the ascending smoke from a camp-fire; yonder is a mesquite, that strange desert tree that gives shade, shelter, fire-wood, flour, sugar and horse-feed to the desert aborigine;

near by is the *chilopsis,* the desert willow, one of the most richly blossoming trees of the world; it is shadow-bringer during the heat of the afternoon to a great *bisnaga,* or barrel cactus, the water-barrel of the hottest desert, the bearer of exquisite blossoms, and the source of the delicious cactus candy that is now tickling the palates of the epicures the world over, and yet, its outer covering is of the fiercest spines, strong thorns that penetrate the thickest leather. Miles and miles of such weary, cactus-strewn, sandy, alkali solitude make this a desert wonderland.

Now, shut your eyes, and sleep for, say, two hours. At a signal open them. This is no desert. You surely have left Arizona while you slept. You *know* you are in Maine, or Wisconsin, or Michigan, where great forests abound, for, as far as the eye can see, even from this cloud-swept eyrie of the stars, you perceive nothing but trees. Sugar pines, yellow pines, firs, and the rest, by the millions, and such magnificent trees as the Maine woods never surpassed as producers of fine clear lumber. Is it not awe-inspiring, wonderful? You are in Arizona, however, on the northern side of the Grand Canyon, looking down on the forests of the Kaibab Plateau. And there are a score or more of such extensive forests as these in Arizona, and the Eastern lumberman, or the university graduate who knows all about the barrenness and desolation of Arizona, and many others besides, will be staggered when I tell them, in sober truthfulness, that Arizona has more standing, merchantable timber, within its boundaries to-day, than any other State in the Union.

Again, presto, change! Open your eyes and tell me where you are. Between vast walls, that rise a quarter of a mile *or less* apart, made of brilliant red sandstone,

the walls reaching up to the very stars. For it is night-time, and the black shadows are enhanced by the patches of moonlight that fall like great white blankets here and there. A thousand, two thousand, feet high, the walls surely must be. Wonderful? Awe-inspiring? Majestic? Certainly, all three words are graphically truthful. Can this be the Grand Canyon? No! The Canyon of the Little Colorado River? The Canyon of the Salt River? No!

Look and listen a while! Do you see that patch of light yonder reflected upon the red walls below the overhanging cliff? And do you see the moving figures? That is a Navaho camp-fire, and the moving bodies are dancers. The song you hear is a death chant, sung to aid the spirit on its long journey to the other world beyond. Ah! and now that your eyes are becoming more familiar with the weird scene, you pick up for yourself a dwelling away-up in the face of the cliff itself? How solemn? How almost creepy? Yet how wonderfully majestic and sublime. You are in the Canyon de Chelly, the home of the ancient Cliff-Dwellers and also of the present-day Navahos. To-morrow morning I will take you to see their peach-orchards, and you shall eat fine, juicy mutton chops from one of the sheep of their vast herds.

Once more we flit on our magic sky-steed. Away and away we go. We are now on the desert again, but it is an entirely different desert from the one we saw before, for here the giant Saguaro, the *Cereus-giganteus,* abound. And the whole plain, barren, sterile, rocky and sandy though it seems, is dotted everywhere with opuntias, echinocactus, mamillaria and cereus, until one can count them by the thousands. These giant trees stand like a new race of sentinels, silent, impassive, but awfully im-

pressive, especially during the night time. How awful it seems! The eye falls upon nothing but this illimitable desert, with these gigantic figures gazing at you, sometimes with arms pointed in your direction like immense semaphores, until the horizon line is reached, and that is composed of a stupendous, rocky mountain range, apparently without a tree or a green spot upon it, and just now, at sunset, a perfect blaze of gorgeous and brilliant coloring. And how hot it is! It seems a veritable Sahara, for it is midsummer, and the heat rises from this vast plateau as from a fiery furnace. Yes, I have kept you here over night purposely that you might see the desert in its varied aspects, of sunset, night, dawn and midday. Forget the increasing heat awhile, and tell me if you ever saw stars in a more black-velvety sky, or saw them so large, vivid and intense. Was ever mountain coloring more tender, soft, alluring than at dawn, or more richly radiant than last night at sunset? Here you are where the air is as pure as that the angels breathe. This is God's own laboratory for keeping the world sweet, wholesome and healthful. The noisome stenches gendered in the cities would poison the inhabitants had not God in his beneficent wisdom created such atmosphere purifiers as these deserts, and then established the wind generators to force this pure air over the poisoned areas and change the noxious products of man's occupancy to the sweet, sun-purified, sun-vivified air of the desert. But now, at noon, how hot it is! Here is atmosphere in the making. The fires are burning furiously. The heat is intense. Cannot you stand it longer? Then close your eyes again in sleep, and in one hour awaken.

Overcoats? wraps? furs? Certainly, we are well provided. But it is now not more than 1:30 P. M. and at 12 o'clock you were denouncing me for keeping you in the

unbearable heat of the desert. We are now on the snowy crests of the Tunicha Range, on the Navaho reservation, looking down upon another desert, where these Navahos make their temporary camps. How chilly it is, yet how pure, sweet, balsam-laden is the air. Yes, we are at an elevation of approaching 10,000 feet, and the plateau below is five to six thousand feet above sea level. Rich forests surround us, composed of spruce, white pine, juniper, aspen, cottonwood and oak, while the Indians are eagerly gathering sack after sack, load after load, of delicious pine-nuts from the pinion trees.

Now let us take another experience. Let us hover over the bad lands of the Painted Desert. John C. Van Dyke used my photograph of this region as a frontispiece to his marvellously eloquent prose-poem *The Desert*. What a weird, colorful, mysterious, hideous, awesome land it is. Let me give you a better and fuller view, taking in a wider expanse. Do you see now why the poetic Spaniards named this *El Desierto Pintado* — the Painted Desert? Imagine this a vast pallet-board, and that a superhuman artist with mighty arm has just squeezed out the color from his mammoth tubes. Here is a patch, ten, twenty, fifty miles in diameter of white; close by is an area equally large of black, and dotted, as artists are wont to dot their painting boards; here and there and everywhere, are patches of red, green, blue, yellow, madder, lake, orange, green, violet, pink and every color known to man, and many that he has not yet utilized, and all in vast quantity. It is the experimental time. How shall he paint a sunset? Color a mountain, glorify the earth at dawn? It is as if this was the place where divine thoughts were tested for man's benefit, and then the pallet-board was left for man to see, to wonder at and revere. Such, with profoundest reverence, are the feel-

ings evoked in the presence of this most marvellous of colorful regions.

Again we sweep through the exquisite Arizona air. We are now above a vast lake, surrounded by majestic, and, occasionally, snow-clad mountain peaks. A lake in Arizona? Yes, and one of vast extent. It is the artificial lake made by the crowning achievement of the United States Reclamation Service, in the construction of the Roosevelt Dam. This is the accumulated water of the Salt and Tonto rivers, with a watershed of 6260 square miles. There are few artificial lakes in the world as large as this, for it is over four miles wide, and twenty-five miles long, with ten times the capacity of the great Croton Reservoir, which supplies the city of New York with water. We have barely time now to look at the massive stonework of the dam, as we hurry down the course of the river to where the Verde River adds its stream to that of the Salt and Tonto and then unitedly flow on to irrigate the hundreds of acres of the Salt River Valley.

Are you not surprised and inspired again? For here is verdure, here are fields knee deep in alfalfa, where fat cattle, horses, sheep and hogs are contentedly grazing; yonder are fig, almond, prune, apricot, peach, avocada, and orange orchards; aye, and delight of delights, scores, hundreds, thousands of stately date-palms, whose fan-like leaves sway to and fro in stately ryhthm in the afternoon breeze. This is the land, the exact counterpart of that described by the biblical narrators as one "flowing with milk and honey." It is bursting with fatness, swollen with richness, and begging man to come and avail himself of its manifold blessings. Desert no longer, this valley is quite tamed. Its fierce heat is tempered; shade trees by the millions render it grateful to the senses; the

cool breezes from the near-by snowy peaks linger in and around the trees and thus bring delicious content to the sons and daughters of man who dwell here. Even the cactus is tamed, for it has lost its fierce prickles as a token to Luther Burbank's genius, and is here fed to the cattle who eat it as one of the luxuries a bounteous providence bestows upon them in this highly-favored land.

Is it anything to be wondered at, that in such a setting, the capital city of Arizona is a proud queen, regnant by virtue of her grace, her beauty, her opulence and her riches? Her sons and daughters are devoted to her. They delight to lavish their gifts upon her, and here, marvel of marvels, wonder of wonders, in the heart of a region once deserted by a prehistoric people of many thousands, because of its growing aridity and heat, has sprung up, in these modern days, one of the richest, most fertile, exquisitely embowered, well-shaded, extra-well-watered cities of the world. For Phœnix is not merely well supplied with water; she is extravagantly supplied, since she joined forces with Uncle Sam's practical scientists, who, guided years ago by that greatest of America's practical geniuses, Major John Wesley Powell, arrested the melted snow-waters of the peaks of Central Arizona, and stored them for man's use.

But we have scarcely begun to glimpse the land of our interest. On our magic ship let us move again, and this time we will navigate slowly over a region dotted over with mountain ranges, all with suggestively romantic names, such as Chiricahua, Pinaleno, Dos Cabezas, Pedregosa, Perilla, Galiuro, Winchester, Dragoon and Mule. This is in Cochise County, and in it is to be found one of the most remarkable and natural Indian strongholds in the country. While not so vast

nor imposing as Canyon de Chelly it was better adapted to its purpose, for the Apache Indian chief, Cochise, from whom the county was named, found it impregnable. To this day it is known as *Cochise's Stronghold*. Wild, rough, tumbled, rugged it seems as if Nature must have made this clump of mountains when in a petulant and fantastic mood. There is nothing shapely or comely about them, for they have no known shape and the masses are so bewilderingly thrown together that they form in mountain structure what printers call *pi*. Ledges, canyons, towers, parts of precipices, bluffs, amphitheatres, walls, domes, smashed, crushed, twisted, broken, up-heaved, up-tossed, down-thrust, are all found in wild confusion. Nothing is where it ought to be, or where it might be expected to be. When one looks for a dome he finds a blind canyon terminating in a precipitous wall — up or down. When he anticipates a blind canyon he climbs to the summit of a dome. The crafty and keen-minded Indian chief found here a place where none could surprise him, none outwit him, none outgeneral him. There were outlooks in every direction, and natural fortresses defending every approach. Well supplied with food and water he could have stood off the armies of the world, save for modern aerial attacks. Here he gathered his warriors; here trained the young Geronimo in those tactics that afterwards cost Arizona and the United States so many precious lives and millions of dollars in destroyed crops and homes and expended treasure.

Yet to-day the ranches of white men and women nestle contentedly and peacefully where Cochise and his moccasin-footed bands used so stealthily to tread, and playing children, nursing mothers and prattling babes make their sweet sounds where once the hideous yells of

painted and fierce warriors arose on the heat-vibrating air.

Then, strange to say, not far away, in the heart of what is truly a wildly desert land, now and again, one may see a great inland sea, a miniature Salton Sea, both in appearance, environment and apparent incongruity. The upper end of the Sulphur Spring Valley was once a lake, and it is now known to scientists as Lake Cochise. Here, when the unusually heavy rains come, that every ten or eleven years fall upon the arid parts of Arizona, a portion of the old lake re-appears, and one rides across it on the cars of the Southern Pacific Company bewildered and wondering at the phenomenon.

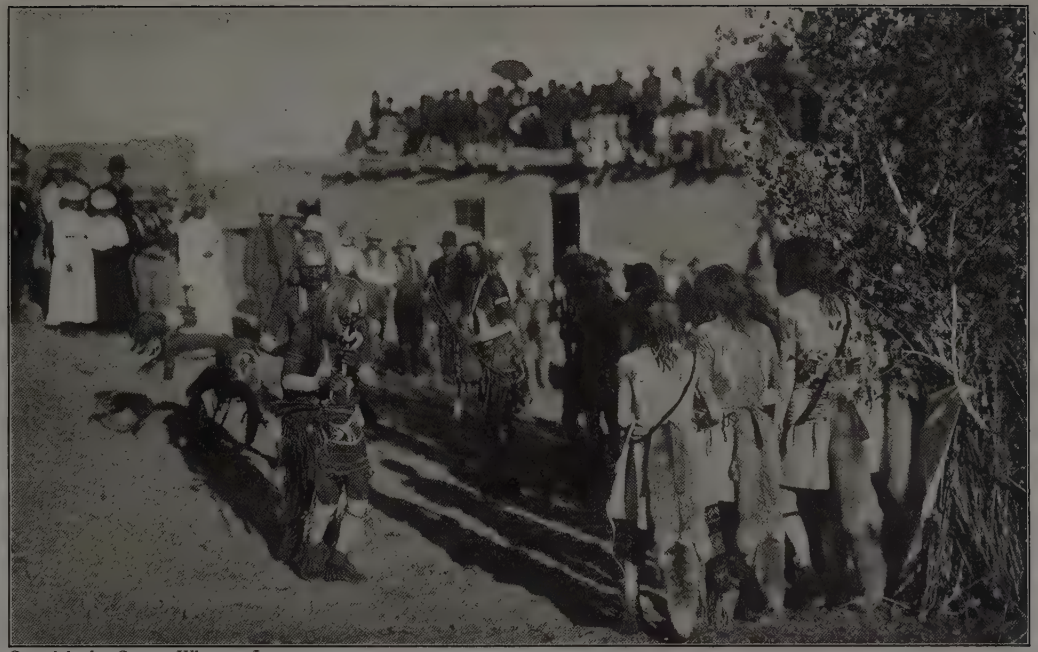
It is now found that the whole of this Valley, for a distance of about ninety miles long and twenty broad, covering fully one thousand eight hundred square miles, is underlaid with good, pure water, at varying distances of from fifteen to less than one hundred feet, hence again is the name " Arid Arizona " to be flouted and decried.

Now let us dash down to the extreme southeastern corner of the State, and lo! what activities are here. Rugged hilly slopes covered with gigantic buildings, erected in steps, and topped by towering steel smoke-stacks that are peculiarly effective contrasted against the soft blue of the clear winter sky. On every hand are the houses and shacks of the miners, with better buildings for the stores and offices. Engines are puffing out their black smoke, as they round impossible-looking curves, on what appear to be recklessly-dangerous shelves on the mountain sides, hauling ore, fuel, fluxes, or material of one kind or another. It seems that out of the most inhospitable-appearing places of these wild and rugged mountains the most profitable ores are extracted, and the vast crushing mills, the chemical and other extractors, the smelters, are

at work day and night, every day in the year, taking from the useless ore that which man needs for coin, for the arts, the sciences, and the manufactures, of gold, silver, copper and other metals.

Once again on our magic ship we will sail to the north to a land named by the Spaniards in the seventeenth century the "Province of Tusayan." We, to-day, know it under the name of the Hopi Indian Reservation. But it is one of the wonderlands of the ages. Europe, Asia, Africa, Australasia have nothing like it; nor indeed has the eastern part of the United States. It is as unique a land as was Lilliput to Gulliver. Imagine a misshapen hand, without little finger or thumb. The wrist and arm spread out over a vast area, which we might call a rocky plateau. From the hand three huge, sprawling fingers are thrust out into the Painted Desert. Each finger is a *mesa,* or table-land of solid rock, from five hundred to eight hundred feet high, and ten miles away from its adjoining finger. Here are natural defenses galore; places where a fearful people might build on precipitous heights, reached only by precarious trails, and where a handful of savages could keep an army of millions at bay, provided that they were equipped with no other than the weapons of savagery. On each of these three fingers villages are built, three on the easternmost, three on the central and one on the western. Here, later, I will take you and show you one of the strangest, weirdest, most thrilling,— perhaps to you most disgusting — yet, withal, the most wonderful religious ceremony known to man, where, as an act of worship, these reverent, serious, devout Indians carry deadly living rattlesnakes between their teeth in performance of one of their ancient and important rites.

Or, did I dare to show it, I might take you to another



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INDIANS CARRYING DEADLY LIVING RATTLESNAKES BETWEEN THEIR TEETH, DURING THE HOPI SNAKE DANCE, ARIZONA.

even more remarkable ceremony, though not so thrilling and awe-inspiring, where phallicism is the subject of reverent and considerate worship, by a people as simple-hearted in this respect as the beasts of the field.

And before we leave this region let me ask you to look upon the corn-fields of this interesting people. Small and meager patches, wrested with infinite patience and incredible labor from the thirsty face of the Desert, who shall say that people capable of such endeavors — which are generally crowned with success — are either lazy or unobserving?

Once more let us wing our flight. Are you a hunter? Then I will take you where antelope, deer, pine-hens and bear abound. We will shoot across the Grand Canyon, and land upon a great detached plateau I well know over there, where, if one were quick enough and expert with the camera he might catch on his sensitive film a thousand head of deer *in one* picture; where, a few miles away, black bear and cinnamon are common enough to be seen almost daily, and where one may have a half a dozen deliciously flavored pine-hens for his table — no, his campfire meal — daily.

Or, perhaps you prefer wild-turkey. Then let me whir you over to the Flagstaff country, into the heart of the San Francisco range, and there you shall get a turkey, if you are an expert; but if you are only an ordinary sportsman I can give you a better region still. Here, south of Holbrook, and east of old Fort Apache, looked down upon by one snowy crowned mountain — Ord Peak — that has an elevation of 10,266 feet above the sea, and another — Thomas Peak — that towers 11,496 feet into the blue, in a well-watered, well-wooded, grassy, almost pastoral country, where the Little Colorado River and its numberless small tributaries have their head —

where are wild turkeys galore. And such big, bouncing bonny, bronze, beautiful birds. I have seen twenty, thirty, and even more in a single flock, and if a man merely knows enough to lift up his gun, and aim near enough to hit a haystack, he will surely feast on turkey as soon as he can cook his game.

And fish, too, are to be found in this same region, almost as fine and as easy to get as in the Lake Tahoe (California) region. I am no fisherman, but when I get very hungry for fish, and there is no one else to fish for me, I will persuade myself to the task, and I have caught seven in a morning before 7:30, varying in weight from half a pound to four times that size.

Yes, indeed, no glimpse of Arizona would be complete that ignored its fine hunting. Nor must I forget that wonderful region, so graphically described by Dr. Hornaday, of the Bronx Park, New York, a sportsman of the highest type, because he incorporates science and humanity into his shooting.

But we are not yet through spying out the land. One more hour's whir of our fans and we fly through the air into the depths of the Tonto Basin, into the Red Rock Country, over Hell Canyon, and the wildest, tumbledest, most upheaved rock country the eye of man ever gazed upon. It is the upper and lower Verde River regions, reached from Jerome, on the line of the Santa Fe, Prescott & Phœnix Railway, or from Flagstaff, on the main line of the transcontinental Santa Fe. Canyons galore seam and slash the sides of the mountain ranges. Towering up, all around, are the Sierra Ancha, the Black Hills, the Mogollon range — a great mountain chain upended — and the Mazatzal, a weird scene of grandeur and rugged beauty. It is cut up into ravines, gorges, arroyos and small stream beds and is one of the roughest places on the

face of the earth. Yet, strange to say, here and there are hidden nooks where are the finest camping-out sites ever enjoyed by man; limpid streams of rippling water, arched over and fully shaded by cottonwoods, sycamores, aspens, junipers, ash and walnut. Here was located old Camp Verde, and not far away are the wonderful Montezuma Castle, and equally wonderful, but far more awe-inspiring Well, of the same name, and throughout all these canyons and on all these mesas are the cliff and cave dwellings of a race who long ago abandoned them, either because of inhospitable climatic changes, or because of fierce and warlike neighbors, who coveted their few paltry possessions even to the point of being willing to commit murder to gain them.

Yet Arizona possesses greater wonders even than these. Let us up, up, into the sky once more and aim for Havasu Canyon, that wondrous home of the People of the Blue Water, the Havasupais, or, as Lieutenant F. H. Cushing called them — because of the wonderful exuberance of the growth of the willows along the banks of their canyon stream — "The Nation of the Willows." One can reach this most marvellous of all marvellous homes that mankind has found, by descending steep and precipitous trails, until he is fully 5000 feet below the surrounding plateaus. Here is a canyon, where the direct rays of the sun seldom penetrate before ten o'clock in the morning, and bid their adieus before two in the afternoon. Yet a people of forty or fifty families has lived here from time immemorial, with a village a mile or two long in the very heart of this deep canyon, where they grow peaches and melons, corn and beans, figs and onions in soil as rich as any land famed in song or story. And wait! Before I can let you leave this land of wild enchantment I want to show you two, three, five of the most exquisite,

dainty and beautiful waterfalls of the known world; waterfalls that led those who first saw them to designate this Cataract Canyon, a name by which it is still known upon some maps.

As we soar again and wend our way southward let us pause long enough to see three regions that the pens of geological savants have made world-famous. The first of these that we pass over is Meteorite Mountain, a vast crater-like appearing spot, where, in the prehistoric past, an immense meteor fell and burst, scattering its valuable material over a large area. A little farther to the east is Sunset Crater and the great Lava Fields. The former is a perfect wonder, in the fact that no matter what the hour at which you see it, what the weather, cloudy or fair, it always possesses a peach-blow, sunset-glow appearance from which it gets its name. All around and about, for miles and miles, are indications of one of the fearful lava-flows of past ages. Great beds of black cauliflower-shaped masses, but of gigantic size and diabolic appearance, meet the eye of any one daring enough to risk losing himself, and having his boots cut to pieces in this wildest of all wild "hell-holes" of the earth's surface. And, yet, still farther east, is one of the regions of enchantment and delight, in the Petrified Forest, where trees were long ago washed down, denuded of their branches, covered with water and sediment and minerals which had been decomposed, saturated the water and then silently but surely elbowed the wood fibre out into the cold, cold world and took its place in the form of richly colored silicas and jaspers and onyxes that dazzle the eye and bewilder the mind. These are regions we could not afford to miss, even though we are on our way to Tucson, once the ancient capital and important city of the whole of this western desert land. It is

important now, but in an entirely different way. It has become a great and growing, prosperous, active, modern business city. Later we shall visit it in detail. At this time all our attention is engaged in the fertile fields which surround it.

And yet the reasonable list of glimpses, even, is far from complete: There are two great trans-continental railways that cross Arizona — the Southern Pacific entering it on the east from Texas, a little above the 32nd parallel, at near San Simon, and wending its winding way across the southern portion of the State, making its exit across the Colorado River into California, at Yuma, just below the 33rd parallel; and the Santa Fe which leaves New Mexico near Manuelito, about midway between the 35th and 36th parallels, and winds in similar fashion to the Southern Pacific until it, too, crosses the Colorado River at the Needles Mountains, near the siding of Topock, just about two degrees higher up — northward — than the crossing of the Southern Pacific. Both railways have branches, the former, the Arizona and Eastern which leaves the main line at Cochise, and runs southward to connect at Douglas with the El Paso South-Western R. R. which swings along the Mexican border as far as Naco, and then goes northward and connects with the main line at Benson. Another line, the Tucson and Nogales, leaves Tucson and follows the course of the Santa Cruz River, passing on the west the historic old mission of San Xavier del Bac, the land of Pimas and Papagoes, and reaching, before it becomes the Southern Pacific of Mexico, the old presidio of Tubac, with its memories of Padres Font and Garcés, and the doughty Captain Juan Bautista de Anza. It also gives the traveler a glimpse of the long-forgotten Franciscan Mission of San José de Tumacacori, which, on my visit a

few years ago, was being used as a stable by an Apache Indian.

At Red Rock a short spur goes south to the mining camp of Silverbell, and at Maricopa the Arizona Eastern connects with Phœnix. This Arizona Eastern line, by the way, has been expanding, until now it practically extends a large part of the distance across the State. It goes east and west from Phœnix, in the latter direction as far as Hassayampa, with expectations of ultimately crossing into California and tapping valuable territory north of Yuma and the Imperial Valley; while eastward it reaches down to the Gila River at Florence, and follows the windings and meanderings of this typical western stream. The intention is to continue it as far as San Carlos, where one branch will go north-east to the mining-camp of Globe, while the other will extend, by way of Solomonsville, to the main line of the " Sunset Route " of the Southern Pacific, at Bowie.

The branches of the Santa Fè are spurs which leave the main line, one at Flagstaff, the other at Challender, to tap the rich timber country north and south. At Williams the Grand Canyon railway leaves for its sixty-three mile run over the Painted Desert to the south rim of the Canyon at *El Tovar Hotel,* which overlooks the Bright Angel Trail. Again at Kingman another branch strikes almost due north to the profitable mining camps of Cerbat, Mineral, and Chloride. From Ash-fork, which is between Williams and Kingman on the main line, the only railway that traverses Arizona from north to south connects the Santa Fé with Phœnix. This is the Santa Fe, Prescott and Phœnix which traverses a most picturesque country, uniting at Jerome Junction with Ex-Senator W. A. Clark's railway that winds and twists like an iron sea-serpent until it reaches the wonderful

copper-mines that are the source of the greater portion of Mr. Clark's wealth, and that made possible the building of the San Pedro, Los Angeles, and Salt Lake Railway.

Thus we have scurried to and fro in imaginary fashion, yet seeing real sights, obtaining glimpses of Arizona. Only a few — sort of samples, as it were — for time and space would fail me were I to begin to do the subject reasonable justice. Other sections are left out — not ignored — simply because a limit is placed upon my space. Yet in every glimpse we have had it has been impossible for us to ignore the marvellously clear quality of the atmosphere through which we have gazed. Euripides speaks of the "pellucid atmosphere" of Greece, through which he saw the Athenians march. Greece has not one single iota of advantage over Arizona in the perfect clarity of her sky. There are few manufactories to pollute the air with vile outpourings of smoke; the country is elevated throughout, and this, in itself, contributes to a freedom from miasma, fog, and mist; it has mountains, deserts and canyons, in close proximity, which make a constant interchange of air necessary, and at the same time clean, purify and filter it as it moves. Hence its clarity, its pureness, its dryness and its perfect healthfulness. One may breathe it day and night with fearlessness; nay, indeed, with the very opposite of fear. Confidence and satisfaction come to one whose lungs are daily and nightly filled with such air as this. It carries its own expansive qualities with it; even the asthmatic, the bronchial sufferer, the tubercular love to take it in deeply, to expand the whole breathing apparatus and feel life, health, vim and vigor flowing in with it.

And the sunshine, too, of Arizona is equal to the atmosphere. It is direct, positive, unadulterated. The

clarity of the air allows it to reach man and the earth just as it was divinely intended it should, and the result is it brings healing, strength and power on its wings. Pure air, pure atmosphere, pure and unadulterated, unrestrained sunshine bless every inhabitant, making the strong stronger, and bringing new hope, new brightness, new life to the weak and ailing.

What wonder then that with every glimpse of this remarkable and marvellous land every beholder grows more entranced, more enthralled, and, as it grows in those things that go to make up our modern civilized life, that it will attract to its environs more and more of those who will become its enthusiastic, healthful, happy and prosperous citizens.

CHAPTER II

THE FASCINATIONS OF THE LAND

No book on Arizona can be regarded as complete that fails to attempt, at least, an explanation of the fascinations it exerts over so many and such diverse people. To do this satisfactorily for others may be impossible, but I can set down wherein Arizona has been a never-failing joy, delight, allurement and source of fascination to me. Years ago, in the introduction to my *Indians of the Painted Desert Region,* and earlier still, in *In and Around the Grand Canyon,* I sought to present some of these allurements and fascinations. I wrote of the mystery and glamour of the Cliff-Dwellings. In those days we knew far less of them than we do now. They had the charm of stimulating the unbridled imagination. Who were the cliff-dwellers? Whence had they come? Whither had they gone? Many a time imagination has run riot when I have sat perched high on a cliff-shelf, reached with great difficulty, and, perhaps, at the peril of my life, as I have thought of the primitive and long-dead people. Who built these inaccessible eyries? Of course — so I cogitated — there could have been no other reason for the building of homes in such aloof and impossible sites than that of pursuit by cruel, vindictive, relentless and persistent foes, determined to hurry them out of existence. The cat watching for the mouse; the panther stealthily following its prey; the weasel falling upon quarry asleep; the spider weaving its web and confidently awaiting the entanglement of its victim, were

all types and symbols suggestive of the pursuers of the harmless, helpless, doomed cliff-dwellers. Then the final scenes of carnage, blood and wanton destruction, when these devoted people were totally destroyed. I pictured the night assaults, the awakened men and terrified women and children, the rush to the ladders, the firing of bows and arrows, the wielding of rude clubs and battle-axes, the casting of obsidian-tipped lances, while women beat the drums and children wailed and yelled in their terror, or shrieked in their pain when wounded.

Oh, I saw pictures that, could they be reproduced by the movies, would attract all the horror-loving crowds, and, sometimes even, I wept over the terrible fate of extinction that befell the unhappy cliff-dwellers. Nor was I so foolish in my mental exercises! I had good authority for a basis, anyhow. I find, to-day, as I read the learned Baron Nordenskiöld's *Cliff Dwellers of the Mesa Verde,* published in Stockholm, that he held the same kind of ideas as I did, also Holmes, Jackson, Powell and most of the early explorers of our Southwest.

Coming down to historic times, I found the early history of Arizona full of allurement.

When the magic name Arizona was sounded in my ears I could see Cabeza de Vaca plodding his weary way across the continent, detained here and there by either hostile, or too friendly Indians. Even to-day, old Fray Marcos de Niza comes before me, making his reconnaissance of the land, preceded by the amorous negro, Stephen, who lost his life at Zuni, just over the line, in New Mexico. I hear the blare of the trumpets as Coronado, with his proud band of conquistadors and horde of camp followers of Mexican and Indian blood, started out for the conquest of this land, where lust for gold was leading them. I see Espejo and his party, and the

sainted Kino and other Jesuits and Franciscans plodding across deserts and canyons, fording streams and climbing mountains to reach far away Hopiland, Tumacacori, San Xavier, Guevavi and the province of Tusayan. It brings up pictures of the devoted padre Garcés, tramping to visit Wallapais, Havasupais and Hopis, seeking to lead them to desire the salvation he felt he was empowered to bring them. And many a time have I seen in vividest imagination the Shamans, or medicine men, of Hopis, Navahos, Apaches and other tribes, talking together of their hatred of Long Gowns — as they called the friars — the men who were destroying their power and influence, who were seducing the people away from the "Ways of the Old," the "Path of Those Above," "The Hopi Way," and in imagination that seemed as real as facts I have heard them plotting to kill both priests and complaisant followers of their own race. Once they were wonderfully successful. No moving-picture was ever more thrilling, exciting, and startling than the reality of the destruction of Awatobi — one of the Hopi towns — related in the traditions of the people, where medicine-men from Walpi, Oraibi, Shungopavi and Mashongnavi stealthily fell upon the Awatobians, as they worshipped in their underground Kivas. Then, in swift succession, I saw the transformation scenes — the ladders drawn up from the Kivas; the worshippers below caught like rats in a trap; the incriminating and denunciatory words of the *Shamans* above, the fierce and bitter replies from below; the gathering of piles of dry brush, the firing of bundle after bundle, the flinging of the flaming masses down in the Kiva, while watchers, with arrows held fast to tightened bow-strings, stood ready to fire upon those who tried to quench the flames; the clouds of dense smoke; the cruel heat; the shrieks and yells of defiance,

the piteous wails of despair; the silence; the smoking ruins. The silent march back of those who felt triumphant, yet knew they had slain their own kin-brothers; the silent weeping of the captured wives and daughters of the slain Awatobians; the quiet whimpering of little children cowed into silence by the terror they could not understand.

Again the name conjures forth pictures of Mexican settlers murdered by Apaches and Navahos, and later, the earlier trappers of the intrepid Saxon as they ventured into this hostile land. As stealthy in their movements as Indians themselves, watchful, careful, studious of tracks of birds, animals and men, they lived nearer to Nature than any members of the so-called civilized races have done before or since. Up and down water-courses, setting their traps on Little Colorado, Colorado Grande, the Zuni, Puerco, Gila, Salt, Tonto, and other rivers — what a courageous band they were. Read Pattie's narrative and get the thrill of that epoch in Arizona, and the name will never sound in your ears again without exciting thoughts of romance within you.

Then came the later epoch of prospector, and picture after picture arises of these solitary enthusiasts, bent on finding gold. The greater the dangers and difficulties, the more sure the precious metal; and it is no fanciful picturing to see these men, asleep in their lonely camps, butchered as they slept by their wily Indian foes, never knowing how they were translated from this life to the next.

Then I saw Lieutenant Ives start with his quaint and old-fashioned steamboat from San Francisco, come down the coast, round the Peninsula of Lower California, and then start northwards up the Gulf to enter the mouth of the Colorado River. Here he gained Indian and white

pilots as otherwise navigation would have been hazardous.

Slowly they work their way up the Colorado River until they reach the Black Canyon, and further progress is impossible.

Then, who is there that knows the Indians of Arizona that does not find fascination and allurement in them? Apaches, with their fierce and warlike natures, their remarkable history (so like that of the Boers), whose leaders Cochise, Mangas Colorado, and Geronimo, secured world fame by their skill as generals, and whose people now are models of working energy; the peaceful Pimas, constructing their irrigating dams and making farms out of forbidding deserts; the Hopituh-Shinumo — the people of Peace — on their mesa heights, living their Quaker-like lives, and dancing their weird snake-dance; the semi-nomad Navahos, as fierce, once, as the Apaches, but broken by the wily tactics of Kit Carson; the Wallapais — the People of the Tall Pines — with their wonderful Mattatiwiddati Canyon; the Havasupais, in their even more wonderful and scenic Cataract Canyon home, through which flows the Blue Water, whence their name; the Mohaves and Chimehuevis and Yumas, on the Colorado River — what a theme is here for enlargement, and how ethnologist, archæologist, and world-traveler find fascination in the contrasts they present, the problems they evoke.

Then, too, think of the fascinations and romance of its Indian wars and campaigns. Read General Charles King's books, and Captain Bourke's *Campaigning with Crook,* Geronimo's *Own Story,* and the various newspaper articles and magazine stories that have been brought forth by this phase of Arizona's life. Many a night, when I have thrown my blankets on the ground, unrolled them, and weary and tired with the day's journey, have

stretched out upon them, I have seen pictures of events said to have occurred right where I was camped; a party of emigrants, women, girls, children in the number, wagons in a circle, horses inside for security, two grizzled men marching up and down as sentries, the dying glare of the campfire, the stealthy approaching of a band of Apaches, the night attack, firing of guns, yells, screams, the moans of the dying, the awful silence of the dead, and the scenes worse than death that, alas, too often accompanied those dread onslaughts. A hundred times, in imagination, I have seen red faces suddenly peer at me from behind boulders, trees, rock shelters, and have, for the time being, been startled into half-dread lest I, too, might be scalped and left for dead on the sandy floor of the desert. Then, too, I have seen the band of troopers start out from one of the United States army posts. I have heard the anathemas pronounced upon the "red devils," quietly and under the breath, yet, nevertheless, powerful and deep, because of some dread discovery of tortured companions, mutilated comrade or, worse still, fearfully abused wife or daughter of unfortunate miner, emigrant or settler. I have watched the soldiers as, led by Apaches or Navaho scouts they neared the Indian stronghold where, in fancied security, the hostiles were celebrating their last successful raid. Then the strategy of approach, the complete surrounding of the band, the signal for attack, the surprise, the startling of the unsuspecting Indians, the yells, shouts, screams, shots, defiance and astonishing escapes of some of the most conspicuous and those whose capture was most desired.

Oh! the imagination plays some strange pranks upon its possessor — or the one who possesses — out on these arid Arizona deserts, or in the shelter of these wild Arizona canyons, forbidding mountain recesses, or dense

forests. Arizona produces mirages of the mind as well as of the plains, and one sees many things that exist only in the imagination, all of which adds to the allurement and the mystery of the land.

Then, too, have you ever felt the lure of the desert? Do you know what its glorious bursts of color mean at sunrise and sunset, its peach-glows, its ravishing pinks and saffrons, its opal glows and amethystine depths? Have you felt the power of its profound solitudes, where you seemed naked in soul and mind before Allah, the Maker of Deserts. In *Our American Wonderlands*[1] and *The Wonders of the Colorado Desert*[1] I have tried, on two widely-apart occasions, to set down some of my impressions of desert lures, but neither of them, or both of them combined, do more than faintly hint at what I have felt, and what others have said that they, too, experienced, while under the spell of the desert. Its wide expanses alone have stupendous effect upon the human mind and soul. They have a corresponding expansion upon one who is responsive. The cool nights on the desert, when the sky seems like a pure velvet pall studded with scintillating diamonds, give one different sensations of the night from any ever known before. And, of course, one must sleep in God's great out-of-doors before he can begin to understand its mysterious charm. I would rather sleep on the floor of the desert, surrounded by barren desolation, forgotten and unknown of most men and women, than be presented with a palace in which I should nightly be compelled to sleep in the most luxurious bed known to modern civilization, if I had to accept therewith the frivolities, inanities and utterly useless and time-wasting devices of much of the society of the same civiliz-

[1] *Our American Wonderlands*, A. C. McClurg & Co., Chicago; *The Wonders of the Colorado Desert*, Little, Brown & Co., Boston.

ation. I flee with dread from the latter to a serene enjoyment of the former.

Even the sand-storms, "whirling devils," mirages, lizards, snakes, Gila monsters, alkali springs and piercing lightnings are different from the unpleasantnesses, inconveniences, terrors and horrors of the cities. There are no hideous Edgar Allan Poe-like mysteries or deviltries hidden in the desert, lurking to steal upon you, or leap startlingly, in the dark. There is an openness, a fairness, a frankness about all desert things, good or evil, which sets them off from that which you find elsewhere, especially in a city.

Then, too, the desert arouses you to questioning. Are we here looking upon a worn-out world, a tired, blasé, useless, outcast, deserted, forgotten and abandoned land, or a world in the building-up, trying-out, purifying, testing, making? Somehow I always feel as if it were the latter. We are here at the start, we are watching the beginnings, we are "in on the ground floor."

Of the scenic fascinations of the land I have written much and often in other books, and in the chapter herein, entitled *Glimpses of the Land,* as well as in other chapters, I have set some of them forth in no uncertain terms.

Of course I shall be accused of "fine writing." I always am, by men who have not seen what I am writing about. How foolish for those *who know not* to criticize the endeavors of those who *do.* How can one who has never seen the wide expanse and bewildering coloring of the Painted Desert, justly criticize the descriptions of one who for thirty years has fraternized with it, reveled in its mysteries, and battled through its sterner moods, who has been scorched by its fierce heat, parched through its lack of water, dazzled by its vivid colors and at other times more than dazzled, almost blinded, by its

The Sun-Kissed Mountains of Arizona.
From a Painting especially made for this work by
J. Bond Francisco.

fierce lightnings, drenched to the skin and chilled through to the marrow by its sudden cold rains; sweltered in its sand-storms, and is yet fascinated by it? Can a stranger analyze the charms one feels even in the punishments a land awards, while one is seeking to penetrate to the heart of the allurements she exercises over him — and there is no denying that some parts of Arizona can punish with a fury and relentlessness she taught to Geronimo and his warrior compatriots.

The Petrified Forest, Sunset Mountain, the Lava Beds, the Extinct Craters, Walnut Canyon, the Red Rock Country, the Mogollon Buttes, the Grand Canyon, Canyon Diablo, Meteorite Mountain, and a score of other scenic wonders and marvels are Arizona's possessions. Her "White Mountain" country alone would entitle her to be called "Wonderland," for no one ever expects those to believe to whom he tells of that land of charm and mystery when he returns to recount what he has seen.

Then the rivers of Arizona! What mysterious fascinations they exert over the mind — the sullen Colorado flowing so relentlessly along in the depths of its dark and somber canyon; at times lashing itself into a wild fury of cascades, rapids, waterfalls, upshooting fountains, treacherous whirlpools and destructive cross-currents! Who that has seen it can ever forget its awe-inspiring and yet thrilling enchantment? The Little Colorado, too. In its rise it is one of the sweetest, purest and delightfully environed of brooks, where deer and antelope come to drink and bathe, and where the fishermen catch trout that are the delight of the epicure, where wild-turkeys and grouse abound and the track of the grizzly is as common as that of the wolf in the backwoods of Michigan. Yet in its later flow that river so completely changes its associations that it is the most perfect example in river-

life of the axiom that "Evil communications corrupt good manners." On its passage to join the main Colorado it absorbs mud and sand, filth and stench, until I have seen it so dirty that a bucketful of its flood allowed to stand over night was four-fifths mud to one-fifth water.

On the other hand, Havasu Creek comes bubbling out from the rocks in a canyon, thousands of feet deep, flows along through the willows, making seven of the most charming waterfalls of America ere it takes its final rush through a chute in the solid granite, a pure-looking, clean stream to be absolutely lost in the muddy, turbid waters of the Colorado.

In the south the Santa Cruz adds its thrill to the lives of the people. For years it will be tame and good. Then — it perhaps learned from the Apache — there is an outbreak and it runs wild. A few years ago I saw it in one of these lawless outbreaks. It had changed local geography. A fine steel bridge, constructed by the people of Tucson to allow them to cross its waters, was left stranded, high and dry, while the river laughed and gurgled in its glee at the joke in a new channel it had carved for itself out of some one's vegetable ranch or fruit farm.

In the west, the Gila and Bill Williams Fork do the same kind of "stunts" when they are so disposed, and he who has once seen the Gila on the rampage, and the town of Yuma trying to protect itself, as the town of Needles has to do from the Colorado, will realize that here is another of the "bucking bronco" rivers of the world — not yet tamed, unused to the saddle and bridle and rather dangerous to ride.

The Tonto and Salt Rivers, on the other hand, are gentled. The Roosevelt and Granite Reef Dams have

brought them into subjection, as the Laguna Dam has given the quietus to the Colorado River hundreds of miles after it leaves the Grand Canyon. Science and concrete, dams and sluiceways, curb the wild ferocity of even these self-willed and torrential floods, and the canals and laterals that divide and distribute their waters in calm and quiet would never dream, from the gentle lappings and sweet sounds uttered by their flowing burden, of their wild, mad, reckless career in the earlier days before the Reclamation Service came to tame them for the benefit of man.

Then what a fascination there is in the hidden mineral wealth of Arizona! How absurd it is for one who has never felt the fever and excitement of prospecting and mining to expect to know what those felt who discovered the Copper Queen, the old Dominion, the United Verde, the Santa Rita, or the recent Oatman mines. Some men have made millions in the mines of Arizona, and every prospector expects, some day, to be one of those men. Day after day, month after month, weary year after year, enduring thirst and flood, drought and storm, fierce heat and penetrating cold, living in a solitude that to many would be far worse than quick, sharp, unexpected death, these men yield to the lure of unseen, unfound gold. They are bound, some day, to strike it rich. While it is *borrasca* to-day, and has been for months and years, it is sure to be *bonanza* to-morrow, or next day, or the next. So they toil on, packing their patient burros with the load of food supplies that grows piteously less daily, and often equally piteously, pathetically and distressingly larger in the increase of useless rocks the poor prospector is gathering up to be sent to the assayer, whose report will again knock down his patiently reared house of cards, with its relentless: "No

gold, no silver," or, "Slight traces only." I've eaten with the prospector by his tiny campfire, in his moments of high exhilaration and buoyant hopefulness when, to him, his beans and bacon, flapjacks and syrup, with a tin cup of Mormon tea, were a banquet fit for the gods; and, again, I have foregathered with him when every mouthful was the ashes of humiliation, wretchedness and despair. Yet he quickly rebounds — either way. When he's up, he's up, and when he's down, he's down, and it is is very seldom he is in the condition of being neither up nor down. Clark struck it rich at the United Verde — why shouldn't *he* do the same? Gage made his pile out of Copper Queen — *Who found it?* Some poor devil of a prospector like himself! "I'll get there, some day, never fear!" he exclaims. "Arizona mines all found!" you tell him. He laughs at you, and gleefully points to the new camp of Oatman, where new millions have been uncovered within the past few months. Is there not allurement in all this — mystery, possibilities, hopes higher than snow-clad mountain peaks?

Then, too, in the scientific and practical development of Arizona's water resources for the reclamation of its arid wastes — is there no fascination here? I was talking recently to one of the best known irrigation engineers of the United States Reclamation Service. His eyes lit up, his face flushed, his words came fluent and eloquent, his gestures became impressive and expressive as he dilated upon the charm and delight of such work. I have heard great generals dilate upon the pleasure they had in planning and carrying out a campaign which resulted in "glorious victories," but there was nothing like the pure fascination experienced as in listening to this engineer tell of his planning his campaign of "peace and national uplift." Then, slowly but surely, to meet and overcome

PASTURING SHEEP IN THE SALT RIVER VALLEY, NEAR PHOENIX, ARIZONA.

the obstacles in the way of such beneficent development; to see the dam rising higher and higher, day by day, that is to make a vast reservoir of vivifying water; to see that water pouring into canals and laterals and then bubbling and laughing as it flowed forth upon the thirsty land; to see that same land later, smiling and richly clad in vivid pasturage, glorious and fruitful orchards, in the midst of which stand homes of happy, peaceful, and contented people! Oh, surely there is marvellous fascination in watching the transformation scenes of an arid and desert region into a cultivated and blossoming land of prosperity!

These, then, are a few of the fascinations of Arizona, and yet I have not told of its wonderful flowers, its rich collection of birds, its wealth of trees, its peculiar desert life, its dead volcanoes, meteor mountains, lava flows, snow-clad peaks, its ice-caves, its mountains and canyon trails. I have said nothing of the fascination many men are now experiencing in their building up of the new State; in experimenting in sociological and municipal problems; in seeking to change the aridity of some men's natures into useful and fruitful fields of helpfulness and blessing.

Oh! Arizona is a fascinating land, without a doubt, and more and more American citizens and foreign travelers will find it out as the years go by, to their infinite pleasure, profit and delight.

CHAPTER III

HOW FRAY MARCOS DISCOVERED ARIZONA

THE first transcontinental traveler! Who was he? What dauntless spirit inspired him to this marvellous journey?

It is a record of sad misfortune, dire disaster, blasted hopes, wretched bondage, constant fears, persistent endeavor, and final success — at least of the few who made the great journey across the Continent from ocean to ocean.

It was in the middle of June, 1527, that an expedition sailed from San Lucar de Barrameda, in Spain, under the command of Panfilo de Narvaez, bound for Florida, and seeking the Fountain of Eternal Youth, and hosts of other good things for the here and now. Spain was aflame with the discoveries and achievements of Cortés, Pizzaro and other adventurers, and the West was the lodestar of every Spaniard's ambition. It was a proud setting forth, this of Panfilo's, but a sadder ending few expeditions ever had. For after landing on the desired coast, he was pursued with ill fortune,— storms, tempests, hurricanes, gales, were not more unkind to him than hostile Indians, hunger and disease. Suffice it to say, that in three years' time he and his expedition would have dropped as completely out of sight as if his vessels had been swallowed up by a tidal wave had it not been for the fact that the treasurer of the expedition, Alvar Nuñez Cabeza de Vaca, with three companions, one of

them a negro, named Stephen, were spared. How they escaped and the others were lost is one of those queer deals of Fate which as yet no one has learned to interpret. For a while it seemed as if they were far worse off than had they perished with their fellows. They were captured by Indians, and practically made slaves of, soon to be raised to a pinnacle of veneration, and almost of worship because of Cabeza de Vaca's medical ability, discovered in some simple remedy he happened to use. To be treated as a slave is not much worse than to be treated as a " big medicine man," when the latter implies a tender watchfulness that gives a man, whose one hope in life is to escape, no chance to do so.

As might be well understood, a man of Cabeza de Vaca's knowledge, while it did not comprehend much more of this great continent than that possessed by Columbus before his death, did at least give him the assurance that, *somewhere, on the other side,* he would most likely find people of his own nation in the land they called New Spain. With a hope born of despair he determined to move westward, ever westward, trusting that the Fate that had hitherto been so unkind would at least bring him and his companions in touch with those of his own kindred.

Year after year went by, yet he never wavered, never faltered for long at a time. Separated now and again from his companions, he yet managed to keep in touch with them, and, at length, on one glad morning in April, 1536, nearly nine years after the triumphant sailing from Spain, he ran upon Captain Diego de Alcaráz and twenty Spanish soldiers, who were out on a slave-hunting foray, near the banks of the Rio de Petatlan, in Sinaloa.

The scoundrel who was thus " ran into," surprised and startled at first to meet with them, wanted de Vaca to be-

tray the friendly Indians who had accompanied him on the latter part of his journey, that they might be captured as slaves, and upon his refusal to have anything to do with so iniquitous a scheme, the wanderers were treated with great harshness and cruelty. But it was not long before they were sent, under guard, to Melchior Diaz — afterwards the brave Captain that came up the Colorado River to Bill Williams Fork — who treated them with consideration, and sent them on to the Viceroy, Antonio de Mendoza.

While these men never entered New Mexico, of which Arizona was then a part, it was this trip that led to the discovery of New Mexico by the Spaniards, and thus became the beginning of its history in connection with the white race. Mendoza, anxious to make discoveries of good colonizing territory, as well as of gold and other valuables, was much struck with Cabeza de Vaca's story of his wanderings. What he had *seen* did not amount to so much as that which he had *heard*. If one small part of this were true, then here, indeed, was a new land worth a conquest.

At the same time Mendoza was beset with another problem. He had a large number of malcontents, misfits, cranks, "pestilential fellows," who, however, had good Spanish connections whom it would not do to offend, and he and the Spanish King were both anxious to get rid of them. Here seemed to be the opportunity. Why not send them to the discovery of this new land of which such wonderful things were spoken, and let them colonize and hold it after it was found?

A leader was at hand in the person of Don Francisco Vasquez de Coronado, but before the expedition started the wise and thoughtful viceroy determined to know more of the land. Accordingly, preliminary reconnaissances

were planned. One was by two companions of de Vaca's, Dorantes and a negro he owned, named Stephen, but this was never carried out. The one that was successful led to the land of Arizona being found and described. Mendoza had discovered that none ingratiated themselves so easily into the confidence of strange Indians as did the Franciscan and other monks of his *entourage*. One was of known ability and integrity. Why not send him? No sooner said than done.

The negro Stephen was to accompany him as guide. Another friar was also to go as companion and friend. Fray Marcos de Nizza, a Savoyard, sometimes called a Frenchman, was to be in charge and the Viceroy's instructions were carefully worded and very explicit. The objective point was a region named Cibola, where large cities were said to exist and much gold and other precious metals, etc., to be found in abundance.

Adolph F. Bandelier's account of the journey of Fray Marcos is one of the historical classics of Arizona.[1] It should be read by every keen Arizonan, not only as a remarkable contribution to the history of his own state, but also as a fine example of the methods followed by modern critical historians to secure absolutely reliable information.

On the seventh day of March, 1539, Fray Marcos left Culiacan, with his negro guide, his lay brother companion, and a few Indians who had come with Cabeza de Vaca. Of the earlier part of this journey I cannot now speak, except that it can be traced with tolerable certainty, and that before it had progressed far the lay brother was stricken with severe illness and had to be

[1] Contributions to the history of the South Western portion of the United States, in papers of the Archæological Institute of America, Vol. V., Cambridge, 1890.

left behind. To facilitate matters, Fray Marcos decided to send the negro on ahead, to pave the way, as it were, and to send back information of the route to be traveled and the aboriginal people to be met. Thus it occurs that a negro became the first "white man" to enter the boundaries of what now constitutes the sovereign State of Arizona.

Arrived at Vacapa, afterwards known as Matape, an Indian village in Central Sonora, the negro went on ahead. His instructions were:

"To go to the north fifty or sixty leagues to see if in that direction there might be observed something great, or some rich country, and well settled, and if he found anything or heard of anything of that kind, to stop, and to send me a message by some Indians. That message was to consist of a wooden cross of white color. In case the discovery was of medium importance, he was to send me a cross of one span in length; if important, the cross was to be two spans in length; and if more important than New Spain, he should send me a large cross."

The trust here imposed upon Stephen does not seem to agree with the statement of Castañeda, the historian of Coronado's later expedition, that the negro had already made himself obnoxious to the Indians of the country and also to the Fray himself by his overbearing manner, and especially by taking along with him the women who were given to him at the villages. Be that as it may, however, Stephen set forth. Ere long he returned a messenger

"with a very large cross, as tall as a man; and they told me, by order of Esteban [Spanish for Stephen], that I should now follow him at once, since he had met people who gave him information of the greatest thing in the world, and that he was with Indians who had been there, of whom he sent me one, and this one told me so many things of the features of the country, that I refused to believe it until I saw it myself, or obtained further proof. He said that

from where Esteban now was it was thirty days' march to the first city of the country, which was called Cibola. He further affirms and says, that in this first province there are seven very large cities, all under one lord, with houses of stone and lime, the smallest ones of two stories and a flat roof, and others of three or four stories, and that of the lord with five, all placed together in order; and on the door-sills and lintels of the principal houses many figures of turquoise stones, of which he said there was a great abundance; and that the people of these cities are very well clothed; and many other particulars he told me, as well about these Seven Cities as of other provinces beyond, of which he said that each one was much more important than the Seven Cities. In order to find out how he came to know all this, I questioned him a great deal, and found him very reasonable."[1]

One of these cities was named Cibola. For years Spaniards had heard of some wonderful seven cities and it was natural that Fray Marcos should assume that these cities, so enthusiastically described by Stephen and his Indian messengers, were the ones so eagerly sought.

Accordingly, two days after Easter Sunday, he left for the north. At the end of three days' march he reached the village where Stephen had first received his knowledge of Cibola, and here he learned that it was thirty days' journey off, that the houses of the towns were as large and high as stated; that Cibola was the first of the Seven Cities, and that besides the seven there were other "kingdoms," called Marata, Acus and Totonteac. Here he also learned that Stephen had disobeyed orders and had gone on instead of waiting for him; an act of disobedience that was to bring him to his speedy death. Doubtless he was urged to this by his own ambitious desire to be the first to discover Cibola. Dazzled by pictures of glory and honor which would surely await him were he to find such a rich treasure-region as this promised to be, he hurried on, leaving a

[1] Quoted by Bandelier in *Contributions*, as above.

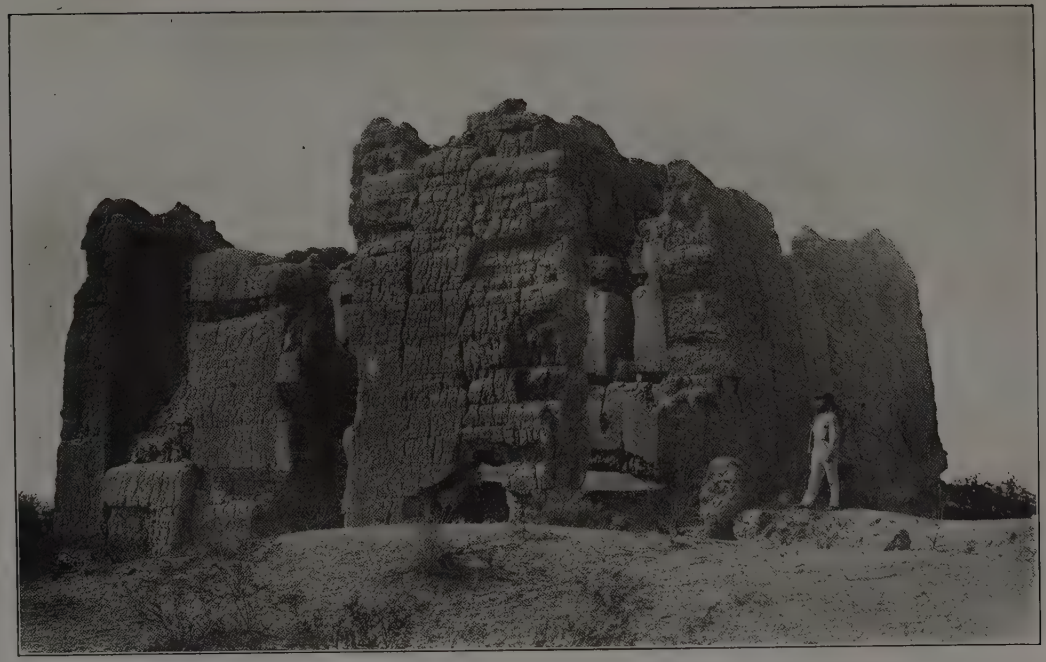
cross daily, in token that the news was still good, and even causing the Indians to build shelters at stated intervals throughout the desert country that his superior might be able to camp in comfort.

Striking north, Stephen followed the Sonora River and finally reached the borders of Arizona near the upper course of the San Pedro River towards the southeastern portion of the State. Marcos was not far behind him. Here the friar rested for three days and again questioned the Indians that lived here about Cibola. Everything he heard confirmed what he had been told before, and he now learned that, after crossing a deserted country, which it would require fifteen days to travel, he would come to Cibola. Of this region Bandelier remarks:

"The Apache reservation of Arizona, often designated as the White Mountain reservation, has been without permanent settlements for the past four centuries at least. The Apaches roamed and hunted through it; and their 'rancherías' lay aside from the trails which crossed from the Gila River to Zuni. In fifteen days a European traveler can cross it on foot; an Indian might do it in shorter time. Zuni lies, not on the border of the timbered mountain region, but within three days' march of its northern limit. It can even be reached from Showlow in two days. South of the reservation, the San Pedro Valley, with its Sobaypuri villages, was the nearest inhabited spot."

From this quotation it is evident that Bandelier identifies Cibola as Zuni, a fact which practically all modern students are now agreed upon.

In accordance with instructions from the Viceroy, that although the whole earth belonged to the Emperor (of Spain), if he saw any land that was particularly good he was specifically to take possession of it with whatever formal ceremonies he deemed most appropriate, Fray Marcos showed his delight with the San Pedro



THE RUINS OF CASA GRANDE IN THE GILA RIVER VALLEY, ARIZONA, PRIOR TO THEIR PRESERVATION BY THE U. S. GOVERNMENT.

Valley by making it the object of these solemn ceremonies and taking formal possession of it.

Now he follows Stephen through the "desert," entering it on the 9th day of May. It was an uninhabited country and that was why it was called a desert, for there was neither lack of water or food. The Indians provided game in abundance. Bandelier takes these facts as conclusive evidence that Fray Marcos did not go by the way of Casa Grande, as some historians have supposed. He says in a footnote:

"To reach Zuni from Casa Grande, or from the Gila in its vicinity, requires long and difficult travel. The mountains are rough and compel long detours. The portion of the Lower Rio Salado between the Tempe Delta on the west and Upper Salt River Valley on the east is almost impassable. The mountains on both sides, the superstition Range and the Mas-a-Sar, are rugged, forbidding and very scantly watered. Beyond the junction of the Arroyo Pinal the headwaters of the Salt River are extremely difficult to traverse; and had he turned northward, avoiding the Sierra Ancha, in order to get into Tonto Basin, months would have been required to reach either Zuni or Moqui from the Gila."

For twelve days only he journeyed, and then to his surprise and horror, he met a returning Indian, in precipitate flight for his Sonora home. A few sentences told his sad tale — Esteban had reached Cibola, but the people had killed him, and his Indian escorts were fleeing for their lives.

This part of the story is well known and needs no enlargement in these pages as it deals with the adjoining State, nor is it necessary that we follow Fray Marcos further in his journeyings. He returned to Mexico, made his report, and in due time Coronado set forth with his reckless and rollicking *conquistadores* on their hopeful quest.

Between them they made Arizona known, and once

brought into the light it has never since been forgotten. Its Indian population fired the zeal of the Jesuits and Franciscans, and as will be related in another chapter, they speedily began endeavors for their spiritual conquest. Missions were founded at Tumacacori, Guevavi, San Xavier del Bac, and at three of the Hopi villages,—Awatobi, Walpi and Shungopavi.

Then came the miners, and after it became a possession of the United States, the cowboys, the trappers, the Indian traders, the railways, and, finally, the home-seekers, the agriculturalists, the health-seekers, and the city builders. It is now in the springing joy of its youthful career of commercial prosperity, which in due time will far more than rival its antiquarian, barbaric and romantic history.

CHAPTER IV

THE JESUITS AND FRANCISCANS IN ARIZONA

In this modern and materialistic age the zeal of the missionary of the cross is not uncommonly characterized as fanaticism. The idea of men's braving the hardships of the desert, the mountains, the wildernesses, of the fierce hostility of aboriginal superstition merely for the propagation of a religious faith — to modern materialism this seems preposterous and absurd. But is it not a sublime manifestation of man's rise above materialism, above all sordid and mercenary considerations, that he is willing to face even death itself for the enlargement of his spiritual concepts?

Few ages have seen such a perfect abandon of missionary activity as was experienced by the newly-discovered continents of America in the sixteenth and seventeenth centuries. All Mexico, Central and South America were missionized. The Cross was carried and planted everywhere. Every tribe and nation, people and tongue was exhorted to receive the saving ordinances of the Church, be baptized and enter the fold of the saved. Every hillside, forest, canyon and valley resounded to the singing of hymns, chanting of chorals, saying of masses, and preaching of the Word, while the hearts of missionaries thrilled, and their eyes filled with tears as their divine passion met with response from the untutored savages of the New World.

Arizona — at that time an integral part of New

Mexico — early felt the impulse of these devoted Spanish friars. Fray Marcos had scarce made his report to the Viceroy, Mendoza, when Coronado set forth. Prominently identified with this expedition were Fray Marcos himself — who, however, was sent back to Sonora soon after Coronado reached Zuni — Frays Juan Padilla, Juan de la Cruz and a lay brother named Luis de Escalona. The two former were brave, devoted men and lost their lives, martyrs to their faith, while Brother Luis is said to have lived long in the land doing good deeds and constantly exhorting the Indians to embrace the true faith. What became of him we do not know.

About forty years later, the Spaniards in Mexico in the meantime having pushed their settlements northward, an expedition started out from Santa Bárbara. It was composed of three friars, nine soldiers, and some sixteen Indian servants. The organizer of the expedition was Fray Agustín Rodríguez, a native of Niebla, Spain; Francisco López, the superior, was an Andalusian; and the third was Juan de Santa María, a Catalan, well versed in astrology. Francisco Sanchez, commonly called Chamuscado, was the military commander. The party reached the pueblos of the Rio Grande and visited Zuni, but Professor Herbert Bolton conclusively shows, from the original documents recently discovered, that, in spite of the oft-repeated assertions and conjectures to the contrary, they never entered what is now the Arizona portion of New Mexico. The party went up the Rio Grande as far as the Tigua towns about Bernalillo, and Father Santa María, desirous of carrying the news to Mexico of what they had seen, set off alone. He was killed a few days later by the Indians. In spite of this, when the soldiers returned to New Spain the other mis-

sionaries decided to remain at the Rio Grande pueblos.

The reports of this expedition, made by Bustamante and Gallegos in May, 1582, greatly interested the Viceroy and led to important consequences for what is now Arizona. He decided to send out a new expedition, firstly, to find out if the missionaries left behind were still alive, and, secondly, to conquer the land and add it to the king's territories.

But there was considerable bickering and dickering — even in our modern sense — ere any expedition was allowed to start. In those days no unauthorized person or expedition could explore even a new country. The king reserved to himself all rights of discovery. But the Franciscans were anxious about the safety of their brethren and Fray Bernaldino Beltrán, of the monastery of Durango, volunteered to head a rescue party. Traveling in New Spain at the time was a wealthy citizen of Mexico, Antonio de Espejo. Hearing the talk about the possible danger to the missionaries, he offered to equip a military escort himself, go along, and personally bear all the expenses. Practically all authorities have asserted that Beltrán and Espejo organized this expedition, and it set forth under the authority they had secured. But Bolton now shows conclusively that the license was given to Fray Pedro de Heredia by Juan de Ibarra, *teniente de gobernador* of New Spain. Journeying north, they discovered that Frays López and Rodríquez had been killed by the Indians at Puaray, thus confirming a report that had come to them before they started that Fray López had perished.

Though, thus far, one chief aim of the expedition was gained, Espejo, on consultation with Fray Beltrán, decided to proceed further. Accordingly, they went to Acoma, thence to Zuni. Here the priest decided to re-

turn to New Spain, but Espejo continued his wanderings, reached the Hopi pueblos, and discovered some rich mines.

His return occurred about a year after he had set forth, and his report upon the rich mines of what is now Western Arizona played an important part in the next expedition, that of Oñate, which was the first real expedition to subjugate and take possession of the land of New Mexico and Arizona.

A number of applications were made to the king and the viceroy for permission to explore and possess this new land, but the contract was finally awarded to Don Juan de Oñate, a wealthy citizen of Zacatecas, whose father was one of the founders of that city, and whose wife proudly pointed to Cortés as her grandfather, and Montezuma as her great-grandfather. Though he started early in 1596, it was not until 1598 that he finally overcame all the vexatious obstacles placed in his way and left New Spain behind. The Franciscans had been put in spiritual charge of the expedition, with Fray Rodrigo Durán as commissary, but now he was recalled and Alonso Martinez put in his place. He was accompanied by Francisco de Zamora, Juan Rosas, Alonso Lugo, Francisco de San Miguel, Andrés Corchado, Cristóbal Salazar (a cousin of Oñate), Juan Claros, Pedro Vergara, and Juan de San Buenaventura — the last two lay friars; also brothers Martin, Francisco, and Juan de Dios.

To Oñate we owe the real conquest of New Mexico. He made his first headquarters at San Juan de los Caballeros. This was on the 11th of July, 1598. Exactly a month later, with the assistance of fifteen hundred Indians, work was begun on an irrigating ditch for the city of San Francisco. Then a church was built and

dedicated and the eight missionaries distributed to their respective pueblos. To Fray Andrés Corchado was allotted the province of the Moqui — the Hopi; hence it is probable that he was the first regularly appointed missionary in what is now Arizona.

Oñate now began extensive explorations. He sent an expedition east, while he wandered west, personally visiting the Hopi towns. From here he sent Captain Marcos Farfán down to Bill Williams Fork to find the mines discovered by Espejo, and some very rich veins were staked out and claimed. Then, in 1604, Oñate himself went over this same road to the Gulf of California, returning to San Juan in 1605, having made friends with the Ozaras (the Maricopa) and the Amacava (the Mohave), the Yumas, the Cuchans, and the Cocopah Indians on the way. Cotton cloth was found; also pearls and silver. The Gulf was taken possession of for the king, and Fray Francisco de Escobar was given charge of it, "in order that our sacred religion may settle and people that land and the others next it and round about, and that we may occupy ourselves in the conversion of the natives in the place and places most suited to our mode of life." [1]

The Gila River was named by Oñate, "El Rio del Nombre de Jesus"— the river of the name of Jesus — and the Colorado, the "Rio Tizon," on account of the

[1] *Journey of Oñate to California,* by Zárate Salmerón, and other original records, in Bolton's *Spanish Exploration in the South West,* Scribner's, 1916.

The value of the Oñate documents discovered by Professor Bolton, and given to the world in this volume, cannot be over-estimated. We have now, *for the first time,* the authoritative records of the Zaldivar Expedition, hitherto known only through Villagrá's poem, *The Farfan Expedition,* and Oñate's own journey into Kansas in 1601. These personal records forever dissipate much vain conjecture and give us the true historical data.

lighted firebrands carried by the Indians to warm themselves in the earlier morning hours.

In 1628–1629 Frays Francisco de Porras and Andrés Gutierrez, with the lay brother Cristóbal de la Concepcion, were sent to the Hopis. Father Francisco was zealous in the conversion of the Indians and reported eight hundred of them duly brought into the gospel net. This angered the native medicine men, and it is thought they poisoned the food of the active father, for on the 28th of June, 1633, he died at Awatobi.

In 1680 it is noted that Fray José de Figueroa was the padre in charge at Awatobi, where the mission was dedicated to San Bernardino. Fray José Trujillo had charge of Shongopavi and Mashongnavi, where five hundred souls were claimed, under the patronage of San Bartolomé, while Frays José de Espeleta and Augustin de Santa María had charge of the mission of San Francisco, or San Miguel, at Oraibi, where they lived, and from which point they visited the pueblo of Walpi.

In the pueblo rebellion of 1680 the Hopis played a conspicuous part. They drove out what Spaniards there were and slew the hated priests named above, though there is a tradition still persistent that Fray Espeleta was left as a slave in Oraibi, where he was used as a beast of burden, and brought out for special ridicule and insult at the various feasts and aboriginal ceremonies.

This rebellion was the natural outgrowth of the subjugation of the Indians by the Spaniards and their being compelled to accept a religious system which they neither understood nor desired. Led by a patriot of San Juan, named Popé, the Indians plotted for fourteen years until the time seemed ripe. The date of the uprising of all the pueblos was set for August 13, 1680,

but — even though no woman was told — the plot was revealed to several of the friars. Governor Otermin sent messengers post-haste to warn all the padres and Spanish colonies, but the Indians determined upon a coup. They arose on the 10th and killed with relentless indiscrimination.

Much new light has been thrown recently upon this rebellion by Charles W. Hackett, on the basis of original manuscripts discovered by Bolton in the archives of Mexico and which were unknown to Bandelier, Bancroft, and others. Hackett's articles have been published in the *Southwestern Historical Quarterly* and *Old Santa Fe,* and no student can afford to neglect these invaluable contributions. They tell the true story of the rebellion, the siege of Governor Otermin in Santa Fe and the escape of the Spaniards to Isleta and El Paso.

Then followed a decade of freedom from Spanish influence. But Popé, like too many others, drunk with power, became as tyrannical as the intruders he had driven out. Civil war reigned. Then, in 1692, Don Diego de Vargas was appointed governor and sent forth with an army to reconquer the country. Most of the Hopis professed peace and were forgiven upon making formal submission, but the people of Oraibi made no overtures for forgiveness, and de Vargas, evidently called away by important doings elsewhere, failed to visit them. They have ever since been recalcitrant, not only to Spaniards, but to Mexicans and Americans, having resisted our own endeavors to compel them to send their children to school.

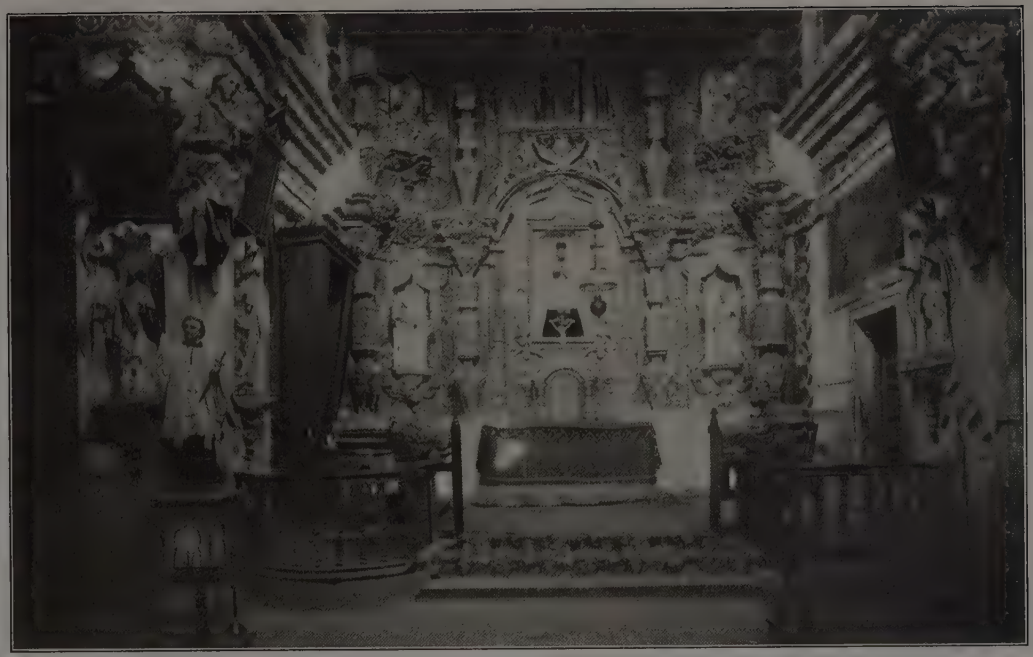
In 1700 Frays Juan Garaicoechea and Antonio Miranda visited them from Zuni and baptised seventy-three children, but the Hopis themselves refused Christianity, though the people of Awatobi must have shown

some symptoms of yielding to the persuasions of the missionaries, for, as I have recorded in Chapter VII, their conditional complaisance so enraged the other villages that a raid was planned and Awatobi completely destroyed.

About this time, on the southern borders of Arizona, another movement was on foot which was materially to affect the country. This was the incoming of Kino, the Jesuit, into the Santa Cruz Valley, as related in the chapters on Nogales and Tucson. When the Jesuits were evicted in 1769 the Franciscans appeared upon the scene, the dominating figure being Francisco Garcés, whose history is related in the chapter on Tucson. He was in charge of San Xavier del Bac in its palmy days. He made various *entradas* into the northern part of the State and visited far away California. From Tubac started de Anza, the valiant captain who founded San Francisco, accompanied by Fray Pedro Font, one of Garcés' Franciscan coadjutors, all of which is more fully related elsewhere.

In the earlier part of this chapter I have recounted some of the efforts of the Franciscans to convert the Hopi — or Moqui as they were called — of the north. After the rebellion of 1680, and the destruction of Awatobi, they most stubbornly refused all missionary proffers, and equally obstinate were they in their determination not to yield again to the yoke of the Spanish oppressors.

On Inscription Rock, on the road between Zuni and Acoma, is found an inscription, the translation of which is as follows: "In the year 1716 on the 26th of August passed by here Don Feliz Martinez, Governor and Captain-General of this Kingdom, to the reduction and conquest of Moqui; and in his company the Reverend



THE INTERIOR OF MISSION SAN XAVIER DEL BAC, NEAR TUCSON, ARIZONA.

Father Fray Antonio Camargo, Custodian and Judge-Ecclesiastic."

Prior to 1774, Fray Silvestre Velez Escalante, one of the New Mexico friars called upon to give their views as to the feasibility and practicability of a road connecting the missions of this region with those of California, enthusiastically approved the project. Knowing little or nothing of the country, he urged the establishment of a route from Monterey eastward, almost in a direct line to Santa Fe. And to prove his belief in his recommendation he started from Santa Fe, in 1774, with a party of nine, including Fray Francisco Atanasio Dominguez, to reach Monterey by this northern route. They crossed part of Colorado and Utah, got lost, struck southward, reached the Hopi towns, spent eight days there, and he reported that he found a population of 7,494 on the three mesas, two-thirds of whom were at Oraibi. But they would have none of him, his church or his people.

The same treatment was accorded Garcés, when he also reached them shortly afterwards. In 1780 Governor Juan Bautista de Anza visited them, owing to a report that famine, pestilence, and the raids of hostile Utahs and Navahos had more than decimated them. But though he found their population reduced from 7,494 to 798 the chief at Oraibi refused a load of provisions and desired that they be left alone, even though it be to meet death.

So it has been all through the chapter to the present day. Though schools have been established among them, some of the older men never cease from their protest and opposition in spite of imprisonment and other severe punishment.

Equally futile seemed all efforts to reach the Navahos. Though Frays Delgado and Irigoyen started in March,

1774, by way of Jemes for the Navaho country and found the Indians apparently eager to become Christians and receive missionaries, and the viceroy ordered the founding of four missions, nothing could be done further north than the Acoma region (New Mexico) where Cebolleta and Encinal were established.

It was not until the last twenty-five years that the Franciscan fathers fully succeeded in establishing successful missions among the Navahos. Coming in from Gallup, New Mexico, they made an excellent beginning at St. Michaels, just on the line between Arizona and New Mexico, where they have a church and a school for children. Here, also, they have a printing press from which Father Berard has issued two of the most important works on the Navahos yet published. These are an Ethnologic Dictionary, which instantly sprang into high favor and went out of print inside of a couple of years or less, and the other a two-part Dictionary of the Navaho language. A branch establishment was later founded at Chin Lee, near the entrance to the Canyon de Chelly, where a fine stone church has been built and many of the Navahos regularly assemble for instruction and worship.

CHAPTER V

THE CLIFF- AND CAVE-DWELLERS OF ARIZONA

How wonderfully civilizations have come and gone in the world's history, one being built up, as it were, upon the ruins of its predecessor! When the Spanish *conquistadores* discovered Arizona and New Mexico, they found ruins, many and varied, scattered over the land, from the Casa Grande on the south to the region now known as Southern Colorado. Possibly they were interested in them; possibly not; of a surety not so much as they were disappointed in not finding gold, silver and precious stones. Their chief aim was wealth — ready and available wealth — and when that failed to materialize they felt their mission was largely a failure. So, little account was taken of these cliff- and cave-dwellings until the American invasion of the country in 1846 when the United States and Mexico went to war. General Kearny, who was sent out to subjugate New Mexico and California, found it necessary, after he had taken possession of the latter territory, to chastise the Navahos. These nomadic and warlike Indians always had been at war with the Mexicans and on Kearny's advent they began to give him trouble. Accordingly, an expedition was sent under Doniphan, with orders to release all prisoners and property they had taken, and to obtain security for their future good behavior, either "by taking hostages or otherwise." This expedition led to the making of a treaty — a business at which the Navahos

were adepts, as well as at breaking them — but was otherwise ineffective, and in 1849, another expedition was sent after them. This time soldiers, on their march from Santa Fe, discovered and described the famous ruins of the Chaco Canyon and Mesa in New Mexico, and then, as they imagined, taking their lives in their hands, they dared the perils and dangers of the Canyon de Chelly, where the Navahos were reported to have an impregnable fortress "so high as to require fifteen ladders to scale it."

The fortress was not found, but Lieut. Simpson — to whom we owe the descriptions of Chaco — found a number of interesting cliff-dwellings, which he described with accuracy.

Then others began to report the discovery of dwellings in cliffs and caves, until it became almost a commonplace. But the "scientific guessers" found these discoveries much to their mind. Out of their innate consciousness, or from their subconscious, or perhaps their subliminal selves, they drew out and spun, as a spider its web, their theories as to the peoples who built, lived in, and deserted these dwellings.

We were told, and most of us believed, they were a dwarf people — because the doors of the dwellings were so small — they were a pastoral and agricultural people, for they wove cotton-goods and grew corn; they were a gentle people, harried and pursued by relentless, tireless, and vindictive foes, who never, for one moment, let up on them, but compelled an almost superhuman watchfulness from their cliff-homes, built as the eagles build their nests in the most inaccessible eyries, and, who, finally, were *trapped, overcome* and *exterminated,* with not a solitary survivor to tell the awful tale.

Will my readers please notice the yellow-newspaper

method of scare headlines followed in describing these hair-raising events — the crescendo of awfulness to the soul-harrowing climax? How we pitied the dreadful sufferings of these poor, patient, mercilessly-butchered cliff-dwellers! Yet no one ever showed us the piles of bones. I suppose the scientific guessers would have told us that the fierce Apaches, the warlike Utes, the relentless Comanches had eaten their enemies alive and that there weren't any bones left,— had we pressed them, but, strange to say, no one was worried about the unfound bones. But how we did weep over the fate of those poor, those dear, sweet, cruelly-massacred cliff-dwellers!

Then the real scientists got to work. Powell, Stevenson, Mindeleff, Frank Cushing, Fewkes, Cummings and the rest — and the sentimentalists got a jolt; an electric shock. The cliff-dwellers had *not* been relentlessly pursued. They had not been driven to these inaccessible cliffs and there kept in a state of siege until their final extinction by a horde of ruthless savages! No; they had *gone* there of their own accord, and had *left* there with equal freedom of volition and action, none daring, or perhaps caring, to make them afraid!

Then we got mad. We didn't believe these new theorists. What did they know about it anyhow? We didn't propose to have our pet romances shattered in that fashion and we jointly stormed and pooh-hooed, sizzled and buzzed about these jackanapes of pretended ethnologists, archæologists, and antiquarians who knew so little of living human nature as to dare to steal from us our romances, over which our tender hearts so often wept, about the butchered, murdered, massacred cliff-dwellers.

But these men kept at it, calmly insisting that we gaze upon the facts. The cliff-dwellers were not dwarfs be-

cause of their tiny doorways. The doorways were made small because they had no lumber to make wooden doors as we do, and they had to use slabs of flat rock which were hard to find and heavy to move. With relentless logic Mindeleff showed the absurdity of the idea that the cliff-dwellers chose the cliffs as fortresses. With equally keen critical discernment, and far more knowledge of the living Indian, Cushing, Fewkes, Bandelier, Hodge, Hough, Hewitt and Cummings, conclusively demonstrated the oneness of the cliff-dwellers with the present-day pueblo Indian.

So there you have the story of the rise and fall of an exploded bubble: the myth of the cliff-dwellers.

One great reason for much of the popular misapprehension that has existed in regard to these ruins is the gross exaggerations of the yellow-newspaper writers. The desire to cause a sensation was much more in evidence than the desire to present ascertained facts. These piles of rough stones were compared with the ruins of Babylon and Nineveh, Baalbeck and Palmyra, Ipsamboul and Philæ, which, to put it mildly, is the veriest bosh. They are no more to be compared than are the yelps, howls, barks and shrieks of a hungry coyote to the mellifluous strains of Melba, Schumann-Heink, Tetrazzini, Caruso or McCormack. Interesting? Wonderful? Certainly! but architectural to a point of comparison with the temples of the old world, most decidedly they are not. And yet I would scarcely say, as one depreciating writer recently did, that: "in fact they were and are mere hovels, as are the houses of the Zunis, Hopis and other pueblos of to-day." This is a little too strong in the other direction.

Some writers have sought to establish a connection between the cliff-dwellers and the mound-dwellers of

Ohio. They have woven a pretty but purely fanciful web — far less strong and durable than that of the common spider — connecting the builders of the serpent mounds with the ancestors of the Hopi, because, forsooth, the Hopis dance the Snake Dance and some of their clans regard themselves as descended from the Snake Mother. Suffice it to say that no scientist of repute, who is personally familiar with the Eastern mounds, the Arizona ruins, and the present-day Pueblo Indians, sees any connection between them.

Yet, nevertheless, these dwellings are interesting beyond measure in themselves, without the attachment of any false sentiment or romance. No world-wide traveler can gaze upon Betatakin, Kitsiel, Canyon de Chelly and other Arizona ruins without delight and absorbed attention. The Casa Grande in the South, followed in succession by the ruins of the Salt River Valley, the Verde country, the Flagstaff country, the Little Colorado Valley, the Navaho country — with those found in the Mesa Verde region on the north, the Pajarito Plateau and the Zuni country on the east — are all sufficiently excavated and studied to confirm the conclusions of Cushing and Powell that they belong to one and the same people, at different periods of their migrations, and under the influence of different environments.

The Casa Grande (Spanish *Great House*) ruins are located in the southern part of the State, half a mile south of the Gila River, and nine miles southwest from Florence, Pinal County. The large house was first mentioned and described by Padre Kino, the Jesuit, who said mass within its walls in November, 1694. It was then four stories high, but roofless. Later travelers have seen and described it, but it was left for Dr. J. Walter Fewkes, of the Smithonian Institution, to study

it sufficiently to describe it, as but one of a large number of houses that surround it in every direction, though the others were smaller and of much inferior construction. The Pimas have a legend that it was built by their ancestors, who occupied all the surrounding country, irrigating the land from the Gila River, but the scientists of to-day rather lean to the opinion that the ancestors of the Hopi or Zuni built and occupied it.

The ruins of the Gila and Salt River valleys are of a somewhat different type, being made, in the main, of rude masonry, the material being the loose rock found available near-by. Hundreds, thousands of these dwellings have been found, and from some of them cotton-cloth, pottery, stone implements of known and unknown use, together with the bones, or even the mummified remains of some of their inhabitants have been taken. To attempt to describe these dwellings would but weary the reader, as they are much like — in general structure — those described later on.

In the Verde Valley, lower and upper, many hundreds of ruins have been found. This is on a natural highway from the Casa Grande ruins to the north, and clearly showed that great aboriginal populations used to reside here at one time. Two of the principal and well-known ruins located about midway between the lower Verde and the upper Verde regions, are the famous Montezuma's Well and Montezuma's Castle, both named doubtless by those who knew as much about Montezuma and his history as does the stone figure on the top of the London monument. The Castle is on the right bank of Beaver Creek, a tributary of the Verde River, and three miles from old Camp Verde. It is constructed in a natural recess of a limestone cliff, about forty feet above the level of the stream. It is accessible only by lad-

ders, and consists of five stories. Built on cedar timbers that rest longitudinally on flat stones on the ledge, it leans slightly towards the cliff, and is an excellent example of the primitive methods followed by the prehistoric aboriginal architects and builders. In 1895, Dr. Miller, of Prescott, organized the Arizona Antiquarian Association, with the avowed intention of protecting this ruin. By his work it was strengthened and cared for, and an act passed through the territorial legislature to prohibit further vandalism on the part of visitors, etc. In 1906 it was declared a National Monument, which it now remains.

Nine miles north of old Camp Verde on Beaver Creek stands Montezuma's Well. It is a natural tank which occupies the center of a low mesa, full of water to a certain level, which practically never changes. There are several cliff-dwellings in the upper portion of the "bowl," and several mysterious and interesting features about the Well which have been graphically described by Charles F. Lummis in his *Strange Corners of Our Country*.

Advancing farther north into the wild and rugged region known as Hell's Hollow to the cowboys — the Red Rock Country of the less vigorous but equally picturesque-languaged residents of the region — many more cliff- and cave-dwellings are found, somewhat different in a few particulars, but generally conforming to those of the lower Verde country.

Those on Walnut Creek, near to Flagstaff, on the main line of the Santa Fe, have been visited by thousands of tourists during the past thirty years. They consist of built up front walls, closing in natural recesses in the cliffs, where a softer stratum of rock has been weathered away, leaving a bench or floor to build upon,

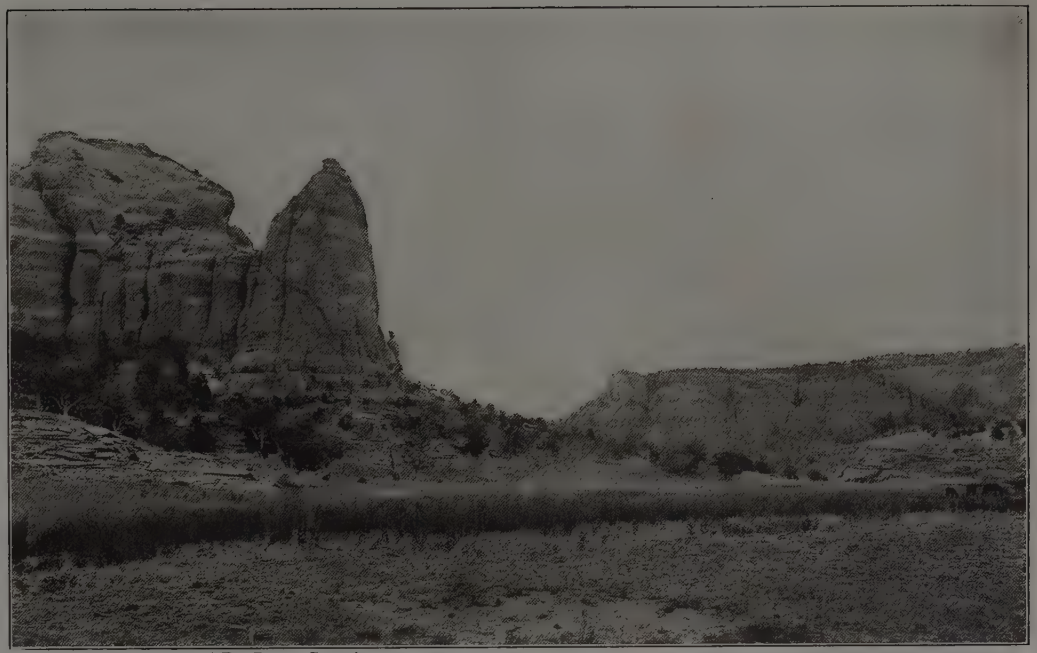
and an overhanging cliff for a roof. Side walls closed in those dwellings, where necessary, and thus a perfect shelter was afforded.

In the Lava Cones, some fifteen or sixteen miles north of Walnut Creek, and about the same distance from Flagstaff, are the Caves, which the Havasupai Indians have always claimed as the original homes of their own ancestors. The pottery and other remains clearly indicate that they were peopled by the same race that occupied the cliff-dwellings.

Going still further north from Winslow, which is a few miles east of Flagstaff, more ruins are found, until one comes to the country of the Hopis and the Navahos. I have elsewhere referred to the ruins of Sikyatki and Awatobi and their excavations. These, while prehistoric, are closely connected with the history of the present-day Hopis. The other ruins are but a little more remotely connected.

In the Navaho region, however, as recently as 1908, one of the finest and most interesting of all the cliff-ruins of the Southwest was discovered, and as the story of its finding has never been made public I am glad to give it place in these pages.

It was well known that there were interesting ruins in the region of Navaho Mountain, and as early as 1894 and 1897, Richard Wetherill — of the family that had discovered the Cliff Palace of the Mesa Verde ruins in Southern Colorado — had visited and excavated the two ruins known as "Swallow's Nest" and "Kitsiel." In 1908 Professor Byron Cummings, of the University of Utah, who had long been quietly interested in the antiquities of the Southwest, with two of his students, Neil M. Judd (now of the National Museum) and Clifton Lockhart, spent several weeks in an exploring



Photograph by Courtesy of Dr. Byron Cummings.

BUBBLING SPRING BRANCH OF SAGIE CANYON, ON THE NAVAHO RESERVATION, ARIZONA.

trip in Northern Arizona. They traversed *Sagie ot Sozie,* and some of the Sagie Canyons. The Swallow's Nest ruin is in the main Sagie, and this they visited, also discovering the Ladder House and several smaller ruins in the Water Lily, a branch canyon of the Sagie.

In June, 1909, accompanied by Professor Blum, Niel M. Judd, Stuart M. Young (a grandson of Brigham Young), and Donald Beauregard, Professor Cummings again returned to Northern Arizona and spent the summer in these Canyons. While at work near the forks of the Sagie Canyon, about four miles above Marsh Pass, John Wetherill (now owning, with his partner Coleville, the Indian trading-post of Kayenta, a few miles away), joined the party to act as guide and interpreter to Navaho Mountain, where they were to search for a great natural bridge that a Paiuti — Noschabiga — had described the winter before to Mr. Wetherill and his wife. That afternoon Johnbiga (a Navaho living in the canyon), visited their camp, and told Mr. Wetherill that his wife knew of a large cliff-dwelling up a side canyon. He was at once hired to take the party to the ruin. What they must have felt when they saw it I can assume only from what I myself felt. Here is what I wrote at the time:

There are many and different emotions that stir the human heart, and some sensations that, once felt, can never be forgotten. Some come suddenly; others more slowly. Some strike one to a note of high exaltation; others to a deep feeling close almost to awe and tears. I had been thinking all the morning of the lives of the cliff-people and those who had occupied the pueblos of the Painted Desert Region — how bare and barren things must have been of anything joyous or happy, save mere consciousness of existence itself, when, suddenly, Betatakin loomed before me. It was not the mass of ruins

that gripped me and held me fast, that made the onward movement of my horse seem like an outrage, a sacrilege; it was the vastness, the stupendousness, the tremendously impressive natural arch that arose above Betatakin. It is surely one of the most marvelous arches of the world. Royal arches of the Yosemite — even though in actual measurement they may be higher and wider — are not comparable with this wide-sweeping solitary arch. *There* the eye is taken with a galaxy of glories — arches, towers, columns and waterfalls. *Here* there is nothing else. The following quotation from Oskison shows that he was overpowered by the same sensation:

"Then Martin, walking two steps ahead, stopped suddenly and put his hand out toward me. I came up, to feel his fingers grip my shoulder. There, wholly revealed, lay Betatakin, a long line of ruins arched over by a span of rock which leaps to such a height that it literally takes your breath away. Clear above the tree-tops it all rose, a dead city set in a perpendicular cliff-face and now untouched by any ray of sunlight.

"'I have waited here forever,' it said to us. 'Untroubled through the years, above that tangle of reaching green, I have sat here serene, watching the suns come and go, welcoming my people in the days when they came dragging tired feet up the canyon, echoing the laughter and the wailings and the weak crying of the men and women and babies who came to me, indifferent to their departure, bearing with the few explorers who come to dig among my ruins, waiting for the slow disintegration of time — and now you have come!'

"Dead silence, and in sort of terror — what is called awe, I suppose — for the first minute. Then, quietly, we scrambled up the last few hundred feet of vague trail to the lovely dripping-spring which issues from under the foot of the ruins."

The visit of Professor Cummings and his party was made on August 9, 1909, *and this was the first time, as far as is known, that it was ever seen by a white man.* But another great discovery was ahead of them. Leaving at once for Navaho Mountain, they came in touch

with W. B. Douglass, a special inspector and surveyor sent out by the Interior Department, to survey and report upon certain regions which it was contemplated making into National Monuments. Here, under the guidance of a young Paiuti, called by the Navahos, Noschabiga, the combined parties discovered on August 14, the greatest natural arch known to the world. The Navahos called it Nonnezoshie (Great Arch), but with a fatuity that it is impossible to understand some one in the Interior Department has named it Rainbow Arch — a ridiculous English commonplace, instead of the direct Indian appellation.

In September, Professor Cummings, and his son Malcolm, returned to Betatakin and spent several days in studying the ruin and excavating a few rooms. Then, after a trip to Salt Lake, he returned again December 1, and completed a systematic study and careful excavation of the whole ruin.

Prior to this, in July, 1909, when on a trip into the Nitsie Canyons, a group lying about twenty-five miles south of Navaho Mountain, and about thirty-five miles north of west of Betatakin, the large cave-house ruins were found, now known as Inscription House. The inscription was uncovered by little Malcolm Cummings. He was digging about, as a boy will, in a desultory kind of way, when suddenly he called out to his papa that he had found a date scratched upon the wall. Examination showed this to be part of an imperfect inscription, the only portion of which that was decipherable being: "Ghos, 1661, Ano," and on another like what appeared to be A. D. It is supposed that this may have been made by some Spanish soldier who wandered into this region in the year named.

It was Professor Cummings who called Mr. Douglass'

attention to this house, urged him to survey it, and recommended that it be included in the National Monument reservation, which was done. He also informed Mr. Douglass of Betatakin and suggested that it be surveyed and included in the Kitsiel Monument. In order that there might be no difficulty in finding it, Mr. Judd was induced to remain and guide Mr. Douglass, which he did, though at considerable personal sacrifice and loss to his own party.

I have been thus explicit in relating these discoveries and their outcome, which I have gained from the Indians and others concerned, as in later years it is interesting to know to whom we really owe the first descriptions of the objects that are pleasing to ourselves.

The Kitsiel referred to is another wonderfully arched cliff-ruin; similar in all its details to the generality of such ruins. Both Kitsiel and Betatakin may be seen in a two days' camping-trip from the Wetherill and Coleville trading-post at Kayenta, where everything necessary for the trip, including a white or Navaho guide, may be secured.

Here, then, we are at the northern limit, *in Arizona,* of the cliff-dwellings, but as I have fully described in my larger work on this subject, there are more ruins in Southern Utah, and the most interesting and important of all — the Mesa Verde ruins — in Southern Colorado.

It is now generally accepted that the people who inhabited these dwellings came from the South, though they had no relationship with the Aztecs, as has been commonly supposed. Their first stopping-place in Arizona territory was in the Salt and Gila River Valleys, where Frank Cushing, near Tempe, exhumed over twenty thousand articles of domestic, social, hunting, war and religious usage, all of which showed kinship

MONTEZUMA CASTLE, A PREHISTORIC CLIFF RUIN, IN THE VERDE VALLEY, ARIZONA.

with the present day Pueblo Indians. Whether these people came at the same time, or later, than those who built the Casa Grande is yet a matter of study.

What drove them from these valleys is not definitely known, yet it is more than probable that one or two seasons of drought led them to hunt for new homes. Their next steps brought them into the Tonto and Verde Valleys, in the Red Rock country, where they built in the cliffs, on the river banks, or the near-by mesas, in accessible and inaccessible places. It was then that Montezuma's Castle was built and the homes around Montezuma's Well — in none of which, however, was the name of Montezuma ever heard.

Then they moved on, and the base of the San Francisco Mountains, Oak Creek, Walnut Canyon, and the Valley of the Little Colorado were next the scene of their activities. Some of the richest finds of the archæologist have been in Homolobi and other excavated villages on the Little Colorado, and thousands of visitors have carried away their only impressions of cliff- and cave-dwellings as the result of their day's ride out from Flagstaff to the "Cave-Dwellings"— dug from volcanic scoriæ in the lava-flows of the San Francisco Mountains — thence to the "Cliff-Dwellings" of Walnut Canyon. Comparatively few, except Indians, traders, cowboys, and Mormons, ever saw the ruins of the Little Colorado, and to them they were only old stone heaps and nothing more, save when they learned that there was a market for any pottery, arrow-heads, articles of obsidian, etc., that they, or the present-day Indians, might dig up from them.

The next movement was into the northern part of the State, into the Navaho and Hopi country, as well as eastward into northern New Mexico. Betatakin and

Kitsiel and the Canyon de Chelly echoed and re-echoed the sound of their voices as they sang at their pottery-making, corn-grinding and in their innumerable dances. Occasionally, doubtless, the yells of their warrior enemies were heard and their own fierce responses of defiance; but not more often than Indians generally have heard the war-cry of their foes. And it is scarcely likely that the cliff-dwellers were much more afraid of their enemies than the latter were of them. They generally managed to hold their own, except when surprised, or caught in small detached bands.

From this region they swept northward into the land of the Ute — the Mesa Verde country of southern Colorado — where the migrations ended, and from whence the remnants of whatever clans there were came and settled in the pueblos of the Hopi, the Zuni, and the region of the Rio Grande.

It must not be inferred that all the cliff-dwellings of Arizona have been discovered. As recently as the summer of 1916, Wesley Hill, the owner of the automobile stage line that is now conveying so many thousands of delighted tourists over the Apache Trail between Globe and Phœnix, went up into the Sierra Ancha, the range that one sees to the northwest from the Roosevelt reservoir, and found a number of dwellings that, as far as is known, had never before been visited by white men. In the White Mountains, too, new dwellings are often discovered, and to one of exploring disposition Arizona undoubtedly affords a rich field for adventure and happy occupation in this particular, as well as in many others.

CLIFF-DWELLINGS NEAR ROOSEVELT DAM, ARIZONA.
Seen on the Apache Trail.

CHAPTER VI

THE INDIANS OF ARIZONA

I ONCE heard a "gentleman," in characterizing the acts of another "gentleman," say something to this effect: "In your association with the Indian you have absorbed all of his vices and none of his virtues. You are as treacherous as a Navaho, as vindictive as an Apache, as cowardly as a Mohave, as dirty-minded as a Wallapai, and as contemptibly sneaking as a Havasupai."

Certainly that characterization did not partake of friendliness to the Indian. Governor Safford used to say that Arizona afforded every type of Indian, more than could be found in any other portion of the public domain. To the old-time Arizonan there was only *one* good Indian, and that was the dead one. Except for the peaceful Pimas, Maricopas and Papagoes, the Arizona Indian was universally execrated, hated, despised, shunned and feared. The very names Navaho and Apache were used by Mexican parents, long before the *gringoes* came, to scare naughty children, and the whites kept it up, with the addition that they themselves, men and women alike, were scared when it was flashed over the wires that either had gone on the warpath. Yet I make the daring assertion in this book on Arizona, that as far as the white men were concerned, the Indians, even those dreaded scourges, the Apaches, never went on the warpath without, *in the first instance,* some white man was the aggressor. And I do not make this asser-

tion unknowingly. One has but to read the testimony and writings of such men as General Crook, Captain — now General — Charles King, Captain Bourke, and others, who actually did the fighting that subjugated the Apaches, to be assured of the truth of my affirmation, and if more testimony is needed it can be found in the Report of a special "Indian Peace Commission" appointed by Congress in 1867, and composed of Generals W. T. Sherman, Harney, Terry, and Augur, Colonels W. F. Tappan and John B. Sanborn, and Senators J. B. Henderson and W. G. Taylor. In 1868 this Commission reported that during fifty years, to the beginning of 1867, the United States Government had spent *five hundred millions of dollars* ($500,000,000) and twenty thousand lives in Indian warfare and (the italics are mine), they said our wars with Indians had been almost constant, and *they unhesitatingly affirmed that the government had been uniformly unjust toward the Indian.* Another U. S. Commissioner declared, in regard to the terrible and hated Apaches, that "They were the friends of the Americans when they first knew them and they have always desired peace with them. . . . The relations of the Apaches were peaceable until the latter *adopted the Mexican theory of extermination and by acts of inhuman treachery and cruelty* made them our implacable foes."

I hold no brief in defense of the cruelty and barbarous atrocities perpetrated upon white men and women (often innocent) by Apaches and others when on the warpath, but in honor I am compelled to face the facts, and these are just as stated by the competent witnesses I have quoted, viz., that some monstrous act of injustice, treachery or cruelty perpetrated by a bad white man upon the Indians first sent them out upon the warpath.

The Storming, by the Apaches, of the Mission of Tumacacori, between Nogales and Tucson, Arizona.

From a Painting especially made for this work by W. L. Judson.

Once there, they fought as savages, aroused, vindictive, hot with hatred, and totally regardless of the actual guilt or innocence of the victim. It was enough that he belonged to the white race.

Fortunately, this era of bloody and hideous warfare is past. An *unattended white woman is safer,* day or night, in the heart of the Navaho or Apache reservations to-day than she is in the heart of any large American city after nightfall. For over thirty years I have visited the various Indian tribes of Arizona and have never carried a weapon of any kind; nor have I felt for a moment that I needed one. I have slept alone, for weeks at a time, in their camps, stretched out on the ground in my blankets, and have felt, and actually been, as secure as if I were in my bed in my own home. Indians — Apaches, Navahos, Wallapais, Tontos, Havasupais, Pimas, Yumas and Mohaves — have been my solitary companions and guides on long trips taken into the secret recesses of little known regions, and never once have I felt a qualm of fear or uneasiness, or lost a minute's sleep wondering whether I was safe. Consequently, I have a *right* to speak of the Indians as I *know* them, regardless of the opinions of others.

Let me here say that to those who, in the unhappy and unfortunate periods when the Indians were on the warpath, lost beloved ones, who were innocent of any wrong towards the Indians, and whose taking off was often accompanied by horrors and mutilations that are scarce believable, my profoundest sympathy is extended. Nor do I wonder that they feel intense bitterness towards the Indians. But even these wrongs do not blind me to the original iniquities of which we, the white race, were the perpetrators, and to which alone the fearful cruelties of the Indians must be attributed.

That the Apaches and Navahos were brave warriors, worthy of the steel of our best soldiers, no one who has read Captain King's *Campaigning with Crook,* or Bourke's *On the Frontier with Crook* will deny.

When the Kearny conquest took place in 1846, Arizona was found to contain the following Indian tribes. Their numbers were practically unknown, and it was not until long afterwards that any systematic attempt was made to take a census of them. Beginning at the east, on the north were the Navahos, who roamed up into Colorado and Utah, as well as far into New Mexico, and south to near the 34th parallel, and clear across the State, overlapping the countries of the Hopis, Wallapais and Havasupais, to within about a hundred miles of the Colorado River. The territory as far as the Little Colorado they regarded as definitely theirs, though conceding the Province of Tusayan — which is east of the Little Colorado — to the Hopis. Beyond there their tenure was not so certain, but roaming bands and isolated families could always be found to the 113th degree of longitude.

The Province of Tusayan is in Navaho County, just south of the 30th parallel, and occupying the space between longitudes 110 and 111. The Havasupais live in a very small part of Havasu (Cataract) Canyon, some forty or fifty miles west of El Tovar Hotel at the Grand Canyon, while the Wallapais, their cousins, have a large reserve, a little further west and south, in about the center and southern end of Mohave County.

There are Mohaves, as there are Chemehuevis and Yumas on both sides of the Colorado River, one portion of the Mohave Reservation being north of Needles, and the other a few miles north of the 34th parallel. The Chemehuevis occupy a beautiful valley in between.

Many Yumas live in Arizona, although the Agency for

Copyright by George Wharton James.

AN AGED HAVASUPAI INDIAN.

the Reservation is just across the Colorado River from the town of Yuma, occupying the old buildings of the abandoned Fort Yuma.

South of Phœnix a few miles live the Pimas, with bands of Maricopas and Papagoes. These tribes live in perfect harmony one with another. Their territory used to be an extensive one, and in Spanish days was mapped as Papagueria, reaching from about midway between the 33rd and 34th parallels to what is now the Mexican line and lower, and from the region east of Tucson to, say, fifty miles or so west of Phœnix.

As for the Apaches, scattered bands of them were found over practically the whole of southern Arizona. They were named according to locality, as, for instance, the Mohave Apaches, who lived in the Mohave Country near the Colorado River; the Tonto Apaches, who occupied the Tonto Basin; the San Carlos or White Mountain Apaches; the Coyotero bands who roamed over that most beautiful of all beautiful regions in east central Arizona, and the Chiricahua — pronounced Cheer-e-kow-a — Apaches whose range was in the extreme southeast corner.

In all these regions government schools have been established for the education of Indian children; many of them have farmers to teach them, and also the adult Indians, modern methods of farming, and in addition there are two independent Indian boarding-schools, where the children are taken away entirely from their own home surroundings, and educated in practically the same way that white children are. These schools are located, one at Phœnix, another at Truxton Canyon, the latter a small Wallapai settlement, where the government buildings have been erected about midway between Kingman and Seligman.

The Indian question in every State is beset with many complexities and difficulties. No amount of reading can ever make one conversant with the facts it is absolutely essential one should know rightly to understand it. For instance, even so well-informed a man as the Honorable Merrill E. Gates, one of the Board of Indian Commissioners, a few years ago, wrote an article on "The American Indian" which appeared in the Los Angeles *Times*. In this he stated:

"While they are often spoken of as 'dispossessed of their lands by the whites,' their present holdings are not inconsiderable! The Indian Reservations set apart by the United States for the 270,000 Indians (about one three-hundredth of our population of 76,000,000), have an area of 119,000 square miles, about one-thirtieth of our entire territory! Each Indian has *pro rata* from nine to ten times as much land allowed him as is allowed to the average American citizen, since 76,000,000 of inhabitants of our territory have in all but 3,603,000 square miles. These Indian Reservations are equal in area to the entire States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New Jersey, Maryland and Delaware, with over two-thirds of the great State of Pennsylvania in addition! Although a large part of the land on these reservations is valueless for farming or grazing purposes, the 'landed interests' involved in the 'Indian question' are seen to be immense. Coal and mineral deposits of all kinds still further complicate the interests involved."

In reading this, and similar statements, I am compelled to the thought that the most mischievous writer of all is the one who uses statistics in such a way that they are at one and the same time perfectly true, yet absolutely deceiving and cruelly misleading. Some statements may deceive yet not cruelly mislead any one, but these statements mislead the white race to the belief that the Indians have far more land than has the white race (in proportion) and that, therefore, our protest on the Indians' behalf is unnecessary. But what matters it

if ten tribes of Indians have ten times more land than they need if other ten tribes (say in Arizona), have little or none, or that which they do have is worthless. Take the whole Navaho and Hopi reservations in Arizona, and save for a few patches of corn and pasture land and the few scattered springs, the major portion of these areas would not be accepted by the ordinary white man as a gift. The same has been the case in California as I clearly showed in my *In and out of the Old Missions,* some years ago.

Furthermore, it should never be forgotten that the Indians (at least as far as we were concerned) were the original owners of the land. We have dispossessed them. By what right? Dr. Gates totally ignores this phase of the question. His argument is on a par with that of a robber who might say, "Why should my victim complain? I have taken only two-thirds of his property, which is distributed among twenty members of my family, while he still has one-third for but four persons." Let us face the unpleasant facts fearlessly and at least be honest with ourselves. We have taken the major portion of the Indians' lands by force; where we have made treaties we have invariably broken them; white "fools and blind" have worked untold havoc with them when placed in positions of responsibility and trust, and the least we can now do with them is to give them as square and honest treatment as is possible, helping them in every way to secure the best and most useful education.

The problem of Indian education is far too large to be argued out in these pages and wiser heads than mine have given much consideration to it. Yet in this, as in all other matters, the practical outcome is a fair test of success. There is no question but that where Indian

children are so trained, and they themselves have the spirit and desire to go out and live with the whites, either in independent occupations, or as employés, their school education is a benefit to them. On the other hand, for the large majority who will not, or *can*not, or anyhow *do* not go out among white people, and who return to their tribal life, it must be confessed the present Indian educational system leaves much to be desired. Is it not self-evident that a system of education is faulty that deprives a child of all self-initiative and responsibility for clothes, food and care, where everything, indeed, is done for him, and where his whole life is regulated to the tap of a bell, so that he is not only not benefited by it when he returns to the reservation, but is actually unfitted for the life he is now compelled to lead? *There* he had a good room, with closets, trunk, etc., in which to keep his clothing; he ate, seated in a chair before a table, with all the equipment of the white race; he slept in a clean bedroom, with a place to hang up his clothes, and with a bathroom near by for regular bathing and sanitary toilet purposes; there he had opportunity for privacy. *Here,* on the reservation, there is no privacy, he has no bedroom — the ground out of doors or inside the rude hut generally being his couch; often he has neither table nor chair; and the bathroom, washroom and toilet are unknown. How can such a one put into operation the things he has been taught at school? When the pupil is a girl, conditions are far worse, for her clothing needs greater care, and for her, privacy is more essential than the boy. Then, too, it is seldom their cooking methods are changed — a camp-fire, a few primitive utensils and the methods honored by centuries of usage. How can a girl keep herself clean squatted before a camp-fire, her clothes ever in the

ashes, her hands pottering about with the grimy utensils that no amount of energy and labor can keep clean?

It is all nonsense to talk of the influence of the educated children upon their reservation-born and -living parents. Such influence as they actually exercise — and I have been watching its exercise for thirty years — would produce results, perhaps, and mainly *perhaps,* in twenty-five thousand years. The effect their education has is to dissatisfy them, fill them with discontent with home conditions, and, unfortunately, it also disqualifies them for living in their former homes. Unless they can "get a job" with the whites, or have — what comparatively few of them possess — the power of initiative to start out for themselves, either among the whites or on the reservation, they are handicapped, hipped and hobbled, instead of helped, by their education.

As I have elsewhere stated, I know of no worker in the whole Indian service who so thoroughly, wisely, and sanely *grasped the situation and solved the problem,* as did W. T. Shelton, formerly the agent for the Navahos at the San Juan Agency, and, though this agency geographically is in New Mexico, his scholars were largely gathered from the Arizona portion of the reservation. He introduced blooded sheep, goats, and beef and milk cattle, and made it possible for his scholars — girls and boys alike — to acquire them. He secured irrigation for their land near enough to the Agency to keep an active interest alive between graduate students and their teachers. He built homes, planted trees and grain, etc., on the land chosen by his graduate students and thus settled them down where they could be helped, guided and influenced by their teachers, and yet where their parents could come and visit them. Yet, because he did not meet with some person's approval who had

the ear of the government, he was made so uncomfortable that he was compelled to resign to preserve his own dignity, and the Indian Service has thus lost a man who was more thoroughly solving its problems than any man it has ever had in its whole history.

To describe all, or even a small part, of the things of interest that pertain to the religious, ceremonial, tribal, social and individual life of the various Indian tribes of Arizona would require not one book the size of this volume, but ten or more. To the ordinary white man an Indian is an Indian, that is all. He sees little or no difference. Yet there are as many racial differences among them as there are between the Chinese and the Englishh, the Germans and the Tagalogs, the French and the South Sea Islanders. It would take several volumes the size of this to describe the various rites and ceremonies of the Hopis, and equally as many those of the Navahos and Apaches. To merely recount the traditions I myself have gathered from these peoples and the Pimas would require several more, and there are still Mohaves, Chemehuevas, Havasupais and Wallapais to be considered. In 1914, I published a volume of over 200 pages, with 32 plates in color and over 200 in half tone, dealing with nothing but the Navaho Indian and his blanket.[1] I could write a book *this size,* without padding, on the single subject of the various pollens of flowers and seeds gathered by the Navahos and used by them in their ceremonials — the symbolism, the songs, the rituals connected with them. Washington Matthews has written two large volumes on the Navaho — one dealing alone with his legends,[2] and the other with *one*

[1] *Indian Blankets and Their Makers,* A. C. McClurg & Co., Chicago, Ill.

[2] *Navaho Legends,* 300 pages, published for the American Folk Lore Society.

single ceremony, called *The Night Chant,*[1] and I do not exaggerate when I say that another Matthews could gather up enough more legends to fill five more books, and that the Navahos have another ten ceremonies to describe, each of which would require another large volume.

Hence I can say but little here of the general subject. Suffice to say there are degrees of aboriginal culture, even as there are stages of civilization with us. The Mohaves, Havasupais and Wallapais represent one stage, the lowest found in Arizona, but by no means as low as is found among aborigines elsewhere in the world; then on a far higher plane come the Navahos and Apaches; still higher are the Pimas, Papagoes and Maricopas, while the pueblo-loving Hopis are, perhaps, taking them all in all, the furthest advanced towards civilization.

They are all, however, nature worshippers, their worship being designed largely for conciliating and propitiating the powers behind natural phenomena. The Snake Dance of the Hopis is a prayer for rain; the *Lelentu,* or Flute Dance, a prayer that the water will flow abundantly into their springs. They pray and dance at corn-planting time, and at harvest time, at the coming of winter and the coming of summer. The Navahos dance away sickness, and have chants and dances for representing their myths and for every purpose under the sun. The Moving Upward chant deals with their legends of "coming up" by stages out from the under-world. The *War Dance* is for dispelling foreign enemies, and also for driving out all evil from the individual or the community; *the Rite of the God men,* which has dance, chants and prayers was used in raids or war; another is for

[1] *The Night Chant,* 330 large folio pages, in the Memoirs of the American Museum of Natural History.

dispelling witches; another called the *Chant for Dispelling the Darts of the Male Powers of Evil;* the *Owl Chant* deals with the making of the moccasin; the *Hail Chant,* the *Corral Rite,* and others deal with capturing wild animals. Then there are the *Big Star Chant,* the *Wind Chant,* the *Coyote Chant,* the *Water Chant,* the female *Lightning Chant,* the *Chant for Trapping of Eagles;* the *Feather Chant,* the *Mountain Chant of the Maiden Becoming a Bear,* the *Chant of Beauty,* the *Chant of the Clan Dance,* the *Feather-shaft or Knife Chant,* sometimes called the *Life Chant,* the *Bead* or *Eagle Chant of the Great Shiprock,* the *One Day Song,* the *Red Ant Chant,* the *Big God Chant,* the *Chiricahua-Apache Wind Chant,* the *Lightning Chant,* and the *Mountain Chant to the Small Birds.*

Some of these dances and chants require hours, others days and nights, and I myself have sat for nine days and nights, except when sleep-weariness overcame me, listening to songs and watching ceremonies and dances that went on in *continuous performance,* with few repetitions, and each song *must* be sung from memory and without the slightest error in word or intonation, or the *whole performance is vitiated and has to be gone over again.*

The songs, too, are not mere meaningless and musicless sounds. The poetry is often richly beautiful, both in sentiment and expression, and our musical experts, as MacDowell, Troyer, Cadman, Farwell, Lieurance, and others, are beginning to appreciate to the full the rich suggestions found in Indian melodies, led by that master of Indian thought as well as Indian music, Natalie Curtis, whose *Indian Book* [1] is one of the marvels of twentieth-century bookmaking.

[1] A book made up entirely of Indian speeches, songs, art-suggestions, etc., of which Miss Curtis was merely the transcriber. Published by Harper & Brothers.

Of the blanketry and basketry of the Arizona Indians much might be written. My regret is that I am able to give so little of the Indian *as I know him to be* to my readers, many of whom, undoubtedly, have been filled up with the ordinary *mis*-information on the subject so that they know, not the *real* Indian, but a bogus and false creature whom the white man's prejudices have created. For instance, the Navaho woman is seldom, if ever, idle. She prepares the food, gathers the firewood, fetches the water, often from long distances, and cares for the children. Yet besides these duties she is often the shepherd watching the large flocks of sheep and goats, moving them from one locality to another as the scant pasturage gives out; nearly always she does the shearing, carries the heavy fleeces on her back to the *hogan,* and then laboriously picks out all the burrs, pieces of stick, etc., by hand, before she washes them. For soap she uses the root of the *amole,* after crushing or macerating it between two rocks. No soap ever made by white chemist surpasses this saponaceous deposit made by Mother Nature, and it communicates a silkiness to the wool which never follows the use of any of our ordinary soaps of commerce.

When clean the wool must be dyed, then carded, spun and twisted with a hand-spindle into kinky, bristling strands before it is ready to be woven. Then the loom is set up, and who that has seen one in its native habitat has not been thrilled with the aboriginal genius of its conception? The warp is wrapped around two poles, which act as warp beams. These are loosely but evenly lashed to two supplementary warp beams, which in turn are tightly lashed, with strongest rawhide, to the solid but rude framework, four square, made out of the trunks of pine, juniper or cottonwood. The base of the

frame is made firm and secure by attaching it with rawhide thongs to pegs which are driven deeply into the ground.

Here in the shelter of a brush *hogan*, yet open on all sides to the winds of heaven, the weaver plies her active, obedient and disciplined fingers. But what of the brain behind the fingers, and of the design those fingers are required to weave? Whence did that busy brain conjure up those remarkable and striking designs? I know that we shall be told by some who "know what they are talking about, as they have been on the Navaho reservation," that the trader supplies the chart of the designs and bids the weaver copy them. True! That is the new way, as the trader has learned that certain designs "take" better with the trade, sell better to his customers, than others, and he is after business pure and simple. The art, *as an art*, means nothing to him, neither does it to many of the weavers of to-day. But to the real good Navahos, the genuine artists, every trader knows he dares offer no chart. They are not to be perverted from the religious ideas of their ancestors, who taught them that the creative and artistic gift was of the gods, to be prized and used, and that *only by so doing* could it be retained. Hence every design is new, every new blanket must have its original design which the active brain of its weaver creates out of suggestions gained from a life-time of careful observation of Nature. The stars, clouds, lightning, falling rain, electric phenomena, springs, rivers, waterfalls, flowing water, sunlight on the water, ripples, cascades, flying birds, nests, trees, flowers, animals — everything is grist to the mill of the Navaho artist's creative mind.

Then comes the actual weaving. In and out of the warp her active fingers carry the weft, sometimes of one

Photograph by Courtesy of the U. S. Bureau of American Ethnology.

NAVAHO BLANKET AND BELT WEAVERS, ARIZONA.

color, then again of a dozen. Her shuttle is only such in name, for she knows nothing of a shuttle. A ball of yarn, or, if the stretch of the weave of a particular color is very wide, a sufficient quantity of yarn wound upon the end of a smooth stick, answers the purpose. Sometimes a dozen tiny balls of yarn will hang dangling down in front, showing the variety of colors and the intricacy of the pattern the weaver has conceived. As each row of weaving is inserted a smooth, round-edged stick, two feet long or thereabouts, and two or three inches wide, called the *batten stick,* is brought down with great force to "batten" the yarn into place.

Slowly the blanket is built up, weeks, months, being required to complete a good one. And here let me say that all the talk about Navahos having forgotten the best traditions of the art is far from true. I would that every weaver still created her own designs, but to our "practical" age this savors more of the academic and theoristic than of the necessary. I would that they still used their own native dyes. They were surer, less glaring, produced more harmonious results, and were good for many life-times, but it is unreasonable to expect the Navaho to follow slow, laborious and intricate dye-making processes, when for a dime she can secure a package of aniline dye which produces results that please most Americans better than her own more subdued colors. Yet when it comes to effectiveness of design, harmoniousness of color-schemes, strength of warp, cleanliness of wool, care in dyeing, fineness in weft, skill in weaving, closeness and neatness of weave, there are scores of Navaho women to-day who can equal any of the fine weavers of the past. Hence, I have no hesitancy in asserting that there are as good Navaho blankets being made to-day as ever in the history of the

art. If any are interested in a fuller discussion of this subject, I refer them to my large book upon the subject.[1]

While there is a well-known basket known as the Navaho Wedding Basket — originally, no doubt, made by the Navahos, though now made only by the Paiutis,— this people can no longer be regarded as basket-makers. But there are several basket-making tribes in Arizona. These are the Pimas, Papagoes, Hopis, Havasupais, Wallapais, Chemehuevis and Apaches. The Pima baskets are rather coarse in weave, and possess striking designs, chief among which are the Greek key and fret, the swastika and a kind of blossom design, where one petal may be seen behind another when the basket is held so as to afford the proper perspective. The Papagoes make a much poorer quality of basket, and it is largely imitative of the art of the Pimas. The Hopis make two kinds of baskets, one with dyed willow splints at Oraibi only, and another of coiled yucca splints, made at all the other villages. The Chemehuevis, Havasupais and Wallapais make comparatively few baskets and there are not many good weavers amongst them. Their splints are the same as those of the Apaches, willow and martynia (or cat's claw), but both in basketry shapes and designs these weavers are far more restricted than their Apache sisters.

In the Museum of the University of Arizona at Tucson, there are two interesting collections of baskets. One is loaned by Perry Merrill Williams of Maricopa, and is mainly of Pima weave, and the other was donated by former Governor George W. P. Hunt, and is of Apache baskets. Another fine collection of baskets of

[1] *Indian Blankets and Their Makers,* fully illustrated, and with 32 plates of typical blankets *in color.* A. C. McClurg & Company, Chicago.

PART OF THE COLLECTION OF APACHE BASKETS OWNED BY MRS. CHARLES A. SHRADER, TUCSON, ARIZONA.

this weave is owned by Mrs. Charles A. Shrader of Tucson, who has had a special building erected for their shelter. The accompanying illustration shows a small part of the collection. Here are placques, bowls and ollas, some of the latter being large and handsome, and all of them with striking designs. When it is recalled that all of these are created in the weaver's mind, without pencil or paper, not even a drawing of them in the sand, it will be seen that they are true artists. There is far more originality with the Apaches than with their Pima and Papago sister weavers. They copy but little, and then only when they have forgotten the religion of their ancestors. The professional ethnologists say they cannot get any interpretation of the symbolism of the designs. The Indians say the old women made them so, and the younger ones copy. But these ethnologists do not know the psychology of the Indian woman. She is as reticent about her inmost feelings as is the most refined and retiring of cultured white women. Why should she tell of her inmost thoughts and feelings to a mere passing stranger, and especially when the stranger is a member of the white race which she hates, despises and fears? It took me over a decade to get my first glimpses into an Indian weaver's heart, and then the privilege was accorded me only because the Indians, men, women and children, had learned to love, respect and trust me. The professional ethnologist who goes on a hurried visit, makes a few photographs and a few outward observations, may question in his inconsequential and desultory way for a thousand years, and it will ever be without result. Love, friendship, sympathy, alone, are the keys that will unlock the door to the secrets the Indian weaver puts into the designs of her baskets.

This subject of Indian baskets I have treated of more fully in another book,[1] many thousands of copies of which have been sold, showing the profound interest felt in it by many of our more intelligent citizens.

The Hopi Indians occupy the northern part of the State, east of the Grand Canyon region at El Tovar, and on the further side of the Little Colorado River. They are the Hopituh Shinumo,— the People of Peace;— hence have been called, not inaptly, the Quaker Indians of Arizona. Interesting in every detail of their lives, they have become world-famed by their remarkable and thrilling ceremonies for bringing the rain, known to the white race as the Snake Dance. In this peculiar rite living and deadly rattlesnakes are carried in their mouths as well as in their hands. Thousands of people have come from all parts of the world to see it, and I have yet to hear one say it was less exciting than he anticipated. I have described this ceremony so often,[2] that I must ask the curious reader to consult one of the books named in the footnote, should he desire to inform himself further in regard to it.

While they are a very different people, the Navahos live near neighbors to the Hopis, the latter occupying the high mesas of a limited region, while the former range many hundreds of miles east and west, north and south.

To me the cornfields of Hopis and Navahos are gen-

[1] *Indian Basketry and How to Make Indian and Other Baskets.* 412 pages, 600 illustrations. Cloth, 8vo. The Radiant Life Press, Pasadena, Calif.

[2] See *Indians of the Painted Desert Region,* Little Brown & Co., Boston; *Our American Wonderlands,* A. C. McClurg & Co., Chicago; *Little Journeys to Strange Places and Peoples,* A. Flanagan Co., Chicago.

erally a pathetic proof of the indefatigable and yet cheerful and brave struggle made by these people with the adverse conditions of Nature. Seldom, if ever, discouraged, they plant their corn where few white men would expect a crop, hoe it with diligence, watch it with intense interest, and guard it with care. When fully grown it is seldom more than three feet high. Some of the ears are pink, some blue, some a yellowish white, and others slightly green. Before taking it up to the mesa, or *hogans,* to be dried by being exposed to the sun, it generally is cooked in the following fashion: A pit is dug that is ten or fifteen feet deep, made with a narrow neck or chimney, and which is hollowed out with quite a cave underneath. On one side a narrow stairway is cut leading down to its base, at the foot of which a small hole is cut through into the chamber. A fire is kindled in this chamber and plenty of inflammable wood piled upon it. The hole serves as a draught and the pit is soon a flaming furnace. When the burning wood has produced sufficient heat, a sprinkling of earth is thrown over the coals, and then corn in the ear is tossed in until the pit is practically full; the bottom hole is carefully closed. Corn husks, hay, leaves and earth are then put over the mass, with a final sealing-cover of mud, and the corn is allowed to remain and steam all night or until its owner thinks it is "done." Then it is ready to be sun-dried, after which it becomes the actual possession of the woman of the house, who stores it away, and without whose permission not a cob of it can be used or sold.

Corn — *natán* — forms one of the chief articles of the Navaho's diet. It is a gift from their gods. Fresh, it is roasted in the ear, or sometimes scraped from the ear and cooked in its own milk. In the olden days,

when I first visited the Navahos, this cooking was done by putting hot rocks into the cooking-pot or basket, stirring up the porridge within so long as the "sizzling" continued, and then deftly yanking out the cooled rock and substituting another one fresh from the bonfire. Never does corn taste so delicious to me as when cooked this way; and roasted on the coals in the ear comes near to being almost as good.

Tortillas are also made from corn-meal, by cooking on a large flat rock, under which a fire is made,— or, according to modern methods, by taking an old coal-oil can, flattening it out and using that instead of the rock-slab.

Bread is made of corn, wheat and even pinyon flour, separate or mixed, as the Navaho cook's storehouse supplies. When the dough is mixed, the sheep-skin that serves as a sleeping-pallet at night-time, is turned over, rudely brushed off with the hand, and is converted into a bread board. When made into loaves it is baked in the ashes. While, as a rule, the Navaho woman now uses baking-powder, once in a while she learns how to make yeast. Then she allows her loaves to remain on the sheep-skin to rise. One visitor, watching the process recently, thus describes an interesting bit of by-play which reveals the Indians' love of practical joking. He says:

"Watching . . . . I was just in time to see the *pater-familias Navaho* perpetrate what he evidently considered an excellent joke upon the cook. He was holding the fat six-months'-old baby in his arms, for the Navaho father takes quite as much care of the children as the mother, and baby was fairly clean, for I had just watched him scrubbing it with sand, which on the desert has to do in place of water. Grasping the little cupid's plump brown foot in his hand, he planted it squarely in the middle of each loaf, leaving a Bertillon imprint that would scarcely be duplicated. The madame, in blanket

and moccasins, smiled affably, baby gurgled its delight, showing a wide, toothless expanse of gum, and the preparation of the meal went on."

In regard to the foregoing statement that sand has to take the place of water in "washing the baby," it requires slight modification. While I have seen Navaho parents use sand in the manner described, it was more for the purpose of removing caked mud or dirt, and not for any vigorous and direct contact with the skin. But as rigid cleanliness, in our sense of the word, would be an absurd refinement to most Navahos, it may be taken for granted that little washing of face and body is ever done. The weekly sweat bath, an exposure of the body to the rain, and a plunge in the rarely-found streams, answers for all ordinary purposes.

Like the Navahos, the Hopis make corn their chief article of diet. They prepare it in the same ways, and also have other methods, notably *piki,* their paper bread, and *pikami,* or baked mush. Piki-making is an art no American has yet practiced successfully. It has been handed down from generation to generation among the Hopis, and to them it is easy and commonplace. As before related, the Hopis grow corn of several colors. In making piki the blue generally is used. After grinding and sifting, it is mixed with water and made into a thin batter. Only the artist knows when the proper consistency is obtained. A fire is then lighted under the *töötna* (cooking stone), and when it is hot enough, the cook seats herself on her legs with her feet turned behind her. Beside her is her bowl of batter, a flat placque holding dry meal and a tin can of mutton grease in which is a rag ready for use. Two fairly long, dry sticks of firewood, nicely gauged so as not to give too great a heat, are thrust under the töötna, and as they

burn the cook pushes them forward. This keeps the heat of the töóma fairly uniform. Now, wiping her grease rag over the griddle, it is ready for the batter. Dipping her fingers in it, she brings up just the right quantity and rapidly and deftly skims over the surface of the griddle. How she can do it without blistering her fingers is a perpetual mystery. Every white person that ever tried it, I guess, always carried a crop of finger blisters for a week thereafter. But in her case she takes the crackling, crisp sheet before it is perfectly dry and folds it over and over, or rolls it into a long roll about an inch and a half in diameter, and the process is repeated.

Pikami is really baked green-corn pudding or mush, but it is made throughout the year, when green corn is unobtainable. The corn-meal is mixed with sugar, or its equivalent, and coloring matter from squash-blossoms. It is then placed in an earthenware *olla* or jar, and covered with a rock which is plastered tightly with mud. In the meantime the oven has been heated. This is a dug-pit, generally just outside the doorway, sometimes lined with slabs, or piled up rocks, and sometimes not, into which pinyon knots and other quick burning wood that leaves a fair quantity of hot coals are placed. On the bed of coals the olla is now lowered, a few coals placed on the cover, the oven itself closed and sealed with mud, and the whole allowed to remain overnight. In the morning a delicious, well-cooked and nutritious mush or pudding is the result, that, when prepared by cleanly hands, is a dish of which I can eat my full share.

Another corn-meal food is *püvülü,* which might well be termed Hopi corn-meal doughnuts, being made somewhat in the same fashion, though they are ball-shaped.

Most of the Indians of Arizona also eat mutton, and

they have learned the use of chili-peppers, beans, squash, onions, and other vegetables, also peaches, from the Spaniards. To some of the tribes the mesquite tree is a special gift of the gods. It affords them shade from the relentless heat of the sun; it gives them shelter from the fierce occasional storms of winter; from its branches they get firewood; from its beans they make their flour which gives them mush, bread, tortillas, sugar and candy, and they also use them for making a drink that has wonderful thirst-quenching powers on these arid deserts.

There are two kinds of mesquite — one, the long-pod mesquite (the *Algarobia glandulosa* of Torrey, and the *Prospis velutina* of later botanists), with pods from four to six inches long which look something similar to our common string bean, and the other, the screw-bean (*Prospis pubescens*), with clusters of wiry curls, spirals, or screws. These consist of a hard outer pod, containing a number of hard little kernels. The pods are sweet, fairly agreeable to the taste and exceedingly nutritious. When freshly gathered the pods of both varieties are buried in pits dug in the moist earth. This removes a certain "vegetably" flavor from them, and they also sweat and partially ferment, and this chemical action develops a flavor the Indians enjoy. When dug up they are spread either on rocks or in large baskets to dry, after which they are ground into flour from which the various foods are made. They are often eaten raw, though to me the taste is far from agreeable.

The Mohaves are great lovers of fish, which they catch in a variety of ways. They make traps of basketry very similar to the eel traps used in England in the county of my birth. These are long, cylindrical arrangements, closed at one end, but with an enticing bell-mouthed

opening at the other. The fish enters, but when he gets well inside he finds a number of sharp willow ends pointed toward him over which it seems impossible to pass. The Mohave also is skilful in the use of the seine, which he makes like a huge basket spoon of open work. This he thrusts under the fish, rudely jerking the latter out of his watery habitat into the boat or upon the land, to his complete and utter undoing. But the most ingenious trap of all is composed where the river bank and sloping beach are just suitable. The Indian's keen powers of observation have taught him that there are certain fish that seem to find their chief enjoyment in moving along by the bank, "nosing" it, and ready to investigate, with a woman's curiosity — an Indian woman's of course — any hole or aperture that may seem curious or inviting. A kind of miniature corral, or stockade, of willows is made, rudely wattled to hold it together. This is firmly stuck into the beach, where the water is not too deep (say three or four feet), in a rude, half-circular shape. A good-sized opening is left, which can suddenly be closed, however, by a door made of basket-work, which the fisherman either holds in his hand or has on the bank close by and handy. He now prepares a number of small balls of mud and some kind of food of which the fish are very fond. These balls are placed in the trap, as bait. In each one of them a willow twig is thrust, the top of which is well above the water. Everything is now ready for action. The Mohave takes his seat and watches. As soon as he sees the willow-twigs begin to shake, move, wobble, he knows that a fish has "nosed" into the trap and is now investigating one of the food balls, and like a flash, he slips the door into place, the fish is caught, he merely having to lift it out with his basket spoon when he is

ready. Many a time have I eaten fish caught in this fashion where the expert white angler failed to get even a bite. The Mohaves cook their fish either by quick broiling on the hot coals, or by covering the whole fish with mud, then placing it in the bed of the fire, raking hot ashes all over it, and thus allowing it to bake. The mud is caked hard, and when the fish is taken from the fire and the mud covering removed, it brings with it the whole of the scaly covering, revealing the tender, juicy flesh with all the flavor retained. No method of cooking fish followed by the white man, in my judgment, equals this. It is the *one* way that all campers-out should learn.

To the ordinary white man life would be impossible under the conditions imposed by Nature upon most of the Arizona Indians. When one thinks of the barren areas of the Painted Desert, on the outskirts of which the Hopis have their homes, perched high on precipitous mesas; of the wild wastes of the Navaho reservation; of the wilderness of the Red Rock Country, he can only wonder at the courage of any people daring to think they could win subsistence from so inhospitable a land. Yet the Hopis make corn grow in quantities in apparently dry wastes, where, yet, they have found subsoil drainage, and Navahos conserve "toh"—water — in the most impossible spots, while Wallapais, Apaches, Pimas, and the rest avail themselves of many desert products to add to their scanty stock of provisions.

Of the varied and picturesque homes of the Arizona Indians references and descriptions will be found in other chapters; of the Hopis and their sky-cities on the mesas of the Painted Desert; the Apaches in their White Mountain reservation; the Havasupais in their canyon of rocky stupendousness glorified by many waterfalls; the Pimas

Papagoes, and Maricopas in the Santa Cruz Valley near the Mission of San Xavier del Bac. But hitherto I have failed to describe that most picturesque and wonderful home of the Navahos in the famous Canyon de Chelly. It is famous, for when the American Army of the West started to take possession of New Mexico (which then included what is now Arizona) and California its leaders believed that this Navaho canyon was a fortress-stronghold as inpregnable as Gibraltar. They approached it with due caution and many misgivings, but soon discovered that, while it was a most rugged and scenic canyon, they need not have been so alarmed as to its impregnability. It is more like the popular conception of a canyon than even the Grand Canyon. After entering its mouth at Chin Lee, where the red sandstone walls open out upon the plain, one penetrates further and deeper into the cleft, until the walls are several hundreds of feet high, while their width scarcely increases, rarely becoming more than a few hundred feet apart. Here Simpson found the first exploited cliff-dwellings of America, many of which have since been excavated, and there are two important Mummy caves. Several miles from its mouth two vast needles of rock, separated from the main wall, stand out as sentinels at the entrance to a branch canyon. There are two of these branches, known respectively as Monument Canyon and Canyon del Muerto, neither of them suffering much in comparison with the main canyon in majesty and sublimity.

Here many Navahos make their homes, cultivating their peach orchards and patches of corn, and caring for their flocks of sheep and goats. There are few such homes of majestic and sublime surroundings in the world, and already American travelers of the pioneer spirit are visiting it before it becomes too common. One may ride to

it in an automobile, diverting from the main highway at Gallup, N. M., but no one should attempt the canyon itself in a machine or without a guide. The safest way is to place oneself in the hands of M. E. Kirk, the Indian trader at Chin Lee. He has horses, both for riding and driving, wagons, and Navaho guides who speak enough English to be intelligible, and properly outfitted by Mr. Kirk, the visitor can well spend a week in these three canyons of wonder. Two or three days are required to make the most hasty and cursory trip.

What has the future for the Arizona Indian? It is hard to tell. The effort is being made to settle him as an individual land-owner where he can earn a sufficient living for himself and family. How successful this will be, and how he will ultimately adjust himself to the new conditions, no one can foresee. It is certain that as the white man crowds upon him more and more his tribal and reservation habits must change. He must either become an integral part of our civilization, or it will not be long before he will become a memory — a vanished race.

CHAPTER VII

THE DESTRUCTION OF SIKYATKI AND AWATOBI IN THE PROVINCE OF TUSAYAN

THERE are many ancient ruins of large size, as well as smaller ones, in the Province of Tusayan — the Hopi-land of to-day — but in all matters, except a few details significant mainly to the scientist and student, they are very little different from the other ancient ruins of Arizona. To determine, however, some of the mooted points in which scientists are interested, Dr. J. Walter Fewkes, of the Smithsonian Institution, determined to excavate two special ruins in Tusayan. The results of these excavations were so remarkable that I resolved to lay the facts before my readers in these pages.

These two ruins were selected because it was pretty generally believed, both by Indians and whites, that Sikyatki was an ancient pueblo, abandoned before the coming of the Spaniards, and that, therefore, it would show the conditions of life of the pure, unadulterated, aborigine, while Awatobi was known to have been the site of a Spanish Mission Church, and under the influence of the outsiders from about 1540 to 1700, when it was destroyed. This, with a study of the modern Hopi pueblos, which have been under Spanish, Mexican and American influence since 1700, would form three separate epochs in Hopi history and thus afford standards of comparison.

Hopi tradition clearly pointed to Sikyatki as the ruin

of a destroyed pueblo. The story is somewhat vague, but such as it is I give it. The people who formed the original inhabitants of the pueblo undoubtedly came after the pueblo of Walpi had been established. The newcomers located on the ridge of the mesa, a few miles back of Walpi. Quarrels and enmities soon sprang up between them. They were possibly of a different people, and each claimed cornfields, springs and wells desired by the other. Matters were brought to a focus by a son of one of the Sikyatki chiefs dressing up as a *Katchina* — a sacred mythological character of the Hopis — and going to a dance at Walpi. He succeeded in gaining entrance to the town in this disguised character, and, during the dance, advanced towards one of the Walpi maidens, who was a spectator, offering her a prayer-stick. As the maiden reached out to take it, the young savage suddenly whipped out a stone knife and slew her. Immediately, throwing off his disguise, he ran to a place of safety, taunting his pursuers with his craftiness and the success of his bloody ruse. This so infuriated the Walpians that, at a council, they decided then and there to end the quarrel, and waiting until the Sikyatkians were at work in their fields, they fell upon and slew them, and then went up to the mesa and destroyed the town. Many of the women and girls were saved, however, and their descendants now form certain clans, or families, in the modern Walpi.

The excavation at Sikyatki satisfied every expectation. Dr. Fewkes found a cemetery located on each of three sides of the ruins, and these yielded a large number of fine pieces of mortuary pottery and other specimens of importance. No sign of Spanish influence of any kind was found.

The ruins of Awatobi were then attacked. The

Navahos had long called this place *Talli-Hogan* — the singing house — and the Hopis had many stories to tell of its people and the reason for their destruction. It appears that when the Ensign Tobar, Coronado's lieutenant, came from Zuni to spy out the land, he and his soldiers came to Awatobi, first of all the Hopi towns. The inhabitants tried to keep them from entering, and the medicine-men sprinkled lines of sacred meal across the trail, even as they do to-day when they wish to signify that there is no admittance — the trail is closed. But the *conquistadores* of those days were no more used to paying attention to the wishes of the weaker than they are to-day, so the meal was disregarded, and in the fight that ensued, though no one was killed, the Awatobians suffered severe punishment. They then bowed their necks to the yoke of the conqueror, who appears to have treated them fairly well for their submission. The other towns of the Hopi, however, while yielding to the superior force of the Spaniards, hated them with a fierce hatred, and, consequently, when the Awatobians showed complacency when the Spaniards built a church there (even though they built at two other Hopi villages), the medicine-men determined it was time to punish them severely. Several leaders of the different villages got together, and when they learned that on a certain date all the men would be engaged in religious ceremonials of some kind in their respective *kivas,* they planned that they would make an attack at that time. I have heard the story told several times by different Hopis, and while there are many variations, in the main facts from now on they generally agree. The following is from Dr. Fewkes' record of the story of Walpi as told by Saliko, the mother of the former snake-priest of Walpi:

HOPI INDIAN WITH LOAD OF CORN FODDER.

"It was then arranged that in four days large bands from all the other villages should prepare themselves, and assemble at a spring not far from Awatobi. A long while before this, when the Spaniards lived there, they had built a wall on the side of the village that needed protection and in this wall was a great strong door. Tapolo proposed that the assailants should come before dawn, and he would be at this door ready to admit them, and under this compact he returned to his village. During the fourth night after this, as agreed upon, the various bands assembled at the deep gulch spring, and every man carried, besides his weapons, a cedar-bark torch and a bundle of greasewood. Just before dawn they moved silently up to the mesa summit, and, going directly to the east side of the village, they entered the gate, which opened as they approached. In one of the courts was a large kiva, and in it were a number of men engaged in sorcerer's rites. The assailants at once made for the kiva, and plucking up the ladder, they stood around the hatchway, shooting arrows down among the entrapped occupants. In the numerous cooking-pits fire had been maintained through the night for the preparation of food for a feast on the appointed morning, and from these they lighted their torches. Great numbers of these and the bundles of greasewood being set on fire, they were cast down the hatchway, and firewood from stacks upon the house terraces were also thrown into the kiva. The red peppers for which Awatobi was famous were hanging in thick clusters along the fronts of the houses, and these they crushed in their hands and flung upon the blazing fire in the kiva to further torment their burning occupants. After this, all who were capable of moving were compelled to travel or drag themselves until they came to the sandhills of Mashongnavi, and there the final disposition of the prisoners was made."

One can imagine how absolutely complete the slaughter was, caught like rats in a trap from which there was no escape, suffocated to death by the burning brush and wood, the torture added to by the fumes from the burning red peppers.

Of course none but the women and children escaped, and the former were soon amalgamated with the other clans by marriage, or rather, as "families" or "clans" of the Pueblos are formed on the maternal side, these women became the founders of their clans, the descend-

ants of which now live in Walpi, Oraibi, Mashongnavi and other of the Hopi villages.

Here, then, was the tradition. What would excavations reveal? According to Vetancurt, the population in 1680 was about eight hundred, and as the massacre occurred in 1700, or thereabouts, it must have been about the same at that dread time.

When the ruins were dug into in the eastern section almost every spadeful removed gave evidence of a great conflagration. That part of the pueblo near to the mission was especially affected. Hardly a single object was found that had not been charred. Many of the beams of the roofs were completely burned and nothing but the ashes remained under the fallen-in débris, while in other places they were charred on their surfaces. Some rooms were found completely filled with ashes and scoriæ, while the walls were cracked as if with intense heat.

One most significant fact was revealed. Had plunder or the vengeance of outsiders been the motive of the town's destruction, all stores of corn, etc., undoubtedly would have been removed either before or after the attack, and before the flames were allowed to spread. But the excavation disclosed storage chambers, where the ears of corn were stacked in piles, just as it can be found in any of the storage rooms of the other pueblos to-day, and while charred, thousands of them are in a perfect state of preservation.

The mission church was dismantled and a few standing walls in sad ruins are all that remain of this splendid effort of the Franciscans to missionize the heathen of Awatobi. Several nights when I have laid in my blankets, thinking over this massacre of a whole population, undoubtedly between five hundred and six hundred

in number, mainly because they were tolerant of the presence of the "long-gowns," who came to subvert the ancient religion of Tusayan, I have asked myself if there is anything that has ever worked more disaster to the sons of men than a tampering with or an attempt to force changes in their religious belief. The instinctive feeling of all men, even primitive savages in Fiji, or the more advanced heathen of Hopi, aye, and the most cultured and progressive of the highest of the civilized races, is expressed in the brusque "Hands Off!" when their religious beliefs are attacked.

Arizona claims the honor of being the home of the first town the whole male population of which suffered martyrdom because of their toleration of those who brought to them the Christian faith as taught by the Roman Catholic Church.

As tradition had it that the hostiles entered the pueblo at the eastern gate, which was not far from the mission, Dr. Fewkes sought for evidences of a fight or massacre there. He found many skulls and other bones piled together in wildest confusion. "The earth was literally filled with bones," he says, "evidently hastily placed there or left where the dead fell. These bodies were not buried with pious care, for there were no fragments of mortuary pottery, or other indications of burial objects. Many of the skulls were broken, some pierced with sharp implements."

Thus the tradition seems to be clearly indicated, and in time to come pious and good Christians will undoubtedly build some kind of a memorial in sacred memory of these aboriginal semi-believers who paid with their lives for what they can scarce be said to have understood, but of which they were willing to learn further.

CHAPTER VIII

THE GRAND CANYON

A BOOK on Arizona without a chapter on the Grand Canyon would indeed be the veritable Hamlet with the chief character left out. For the Grand Canyon is not only the most noted and distinctive scenic feature of Arizona, but of the North American Continent. It stands alone in its stupendous vastness, its wondrous coloring, its fascinating and alluring mysteries, its profound abysses, and its unique and incomparable formations.

The Santa Fe Railway has made it easily accessible. One may take his seat — aye, the most delicate of transcontinental travelers may take her Pullman drawing-room, in Chicago, and ride direct to El Tovar, the perfect Fred Harvey hotel on the rim of the Canyon — and without a moment's weariness, ennui or deprivation of any accustomed luxury, gaze upon this wonderland of form, color and mystery.

Let Zane Grey describe a sunset there for you:

"About time for the sun to set, I strolled along the rim wall to look into the Canyon. I was beginning to feel something of its character and had growing impressions. Dark purple smoke veiled the clefts deep down between the mesas. I walked along to where points of cliff ran out like capes and peninsulas all seamed, cracked, wrinkled, scarred and yellow with age, with shattered, toppling ruins of rocks ready at a touch to go thundering down. I could not resist the temptation to crawl out to the farthest point, even though I shuddered over the yard wide ridges, and when once seated on a bare promontory, two hundred feet from the regular rim wall, I felt isolated, marooned.

"The sun a liquid red globe, had just touched its under side to the pink cliffs of Utah and fired a crimson flood of light over the wonderland mountains, plateaus, escarpments, mesas, domes and turrets of the gorge. The rim wall of Powell's Plateau was a thin streak of fire, the timber above like grass of gold, and the long slopes below shaded from bright to dark. Point Sublime, bold and bare, ran out toward the plateau, jealously reaching for the sun. The Temple of Vishnu lay bathed in vapory shading clouds, and the Shinumo Altar shone with rays of glory.

"The beginning of the wondrous transformation, the dropping of the day's curtain, was for me a rare and perfect moment. As the golden splendor of sunset sought out a peak or mesa or escarpment, I gave it a name to suit my fancy; and as flushing, fading, its glory changed, sometimes I rechristened it. Jupiter's Chariot, brazen-wheeled, stood ready to roll into the clouds. Semiramis's Bed, all gold, shone from a Tower of Babylon. Castor and Pollux clasped hands over a Stygian river. The Spur of Doom, a mountain shaft as red as hell, and inaccessible, insurmountable, lured with a strange light. Dusk — a bold black dome — was shrouded by the shadow of a giant mesa. The Star of Bethlehem glittered from the brow of Point Sublime. The Wraith, fleecy, feathered curtain of mist, floated down among the ruins of castles and palaces like the ghost of a goddess. Vales of Twilight, dim, dark ravines, mystic homes of specters, led into the awful Valley of the Shadow, clothed in purple night.

"The last rosy gleam faded from the tip of Point Sublime; and as if that were a signal, in all the clefts and canyons below, purple, shadowy clouds marshaled their forces and began to sweep upon the battlements, to swing colossal wings into amphitheaters where gods might have warred, slowly to enclose the magical sentinels. Night intervened, and a moving, changing, silent chaos pulsated under the bright stars."

That is a vivid and illuminating description. Fine writing! some critic may exclaim. Certainly it is. It is the effort of the mind, aye, the soul, to express its deep emotions under the powerful influence of the Canyon, and no man or woman of feeling ever escapes the impulse, the strong desire to express what each one knows is inexpressible — the Canyon's power over the man is beyond the man's power to formulate into words. Yet Zane Grey has made a successful stagger at

it, that I can appreciate, for I think I have read more attempts than most men, and know how far short of the reality, without exception, they all come. So now I will ask Mr. Grey to give us his impressions of sunrise. And let those who question its truthfulness go out to some such spot as he sat upon and read it word for word, line by line, as a sunrise is illuminating the Canyon at his feet:

"The awfulness of sudden death and the glory of heaven stunned me! The thing that had been mystery at twilight, lay clear, pure, open in the rosy hue of dawn. Out of the gates of the morning poured a light which glorified the palaces and pyramids, purged and purified the afternoon's inscrutable clefts, swept away the shadows of the mesas, and bathed that broad, deep world of mighty mountains, stately spars of rock, sculptured cathedrals, and alabaster terraces in an artist's dream of color. A pearl from heaven had burst, flinging its heart of fire into this chasm. A stream of opal flowed out of the sun, to touch each peak, mesa, dome, parapet, temple and tower, cliff and cleft into the new-born life of another day.

"I sat there for a long time and knew that every second the scene changed, yet I could not tell how. I knew I sat high over a hole of broken, splintered, barren mountains; I knew I could see a hundred miles of the length of it, and eighteen miles of the width of it, and a mile of the depth of it, and the shafts and rays of rose light on a million glancing, many hued surfaces at once; but that knowledge was no help to me. I repeated a lot of meaningless superlatives to myself, and I found words inadequate and superfluous. The spectacle was too elusive and too great. It was life and death, heaven and hell."

So much for description.

How the Canyon came into existence is the problem of the geologists. There are those who affirm they know. The more scientific and discreet present their theories with becoming diffidence. A stupendous monograph, fascinating as a novel, and containing some of the prose poems of the English language was written by Captain Clarence E. Dutton upon its geological history.

The Grand Canyon of Arizona.

Later geologists have written often and much about it, the last and best paper being by L. F. Noble, and entitled *The Shinumo Quadrangle, Grand Canyon District, Arizona.* Those really interested should read both these learned papers. He will therein find that the geologists regard corrasion, as the chief, but by no means the only, agent of the Canyon's creation. By corrasion is meant the erosive force of water, etc., exercised while the land eroded is being uplifted, slowly or rapidly, from its primeval level. It is erosion, but erosion plus, and while volcanic crackings, faultings, flexuring and warpings of the earth's surface have helped, and in some cases, undoubtedly, aided in determining the course of the great river, the chief agent was the river itself exercising its cutting power as the continent was slowly uplifted from the primeval ocean.

The first scientific explorer of the Canyon was Major John Wesley Powell, the one-armed hero of Shiloh, who, in two voyages extending from 1869 to 1872 went from Green River, Wyoming, to the Grand Wash, below the Canyon. As a memorial to this daring adventurer and his companions Congress appropriated a sufficient sum of money for a bronze tablet, which was placed upon a substantial base on Maricopa Point.

Others have since made the trip, and the Kolb Brothers, at their studio, at the head of the Bright Angel Trail, give daily lectures illustrated by moving pictures which they made of their own perilous experiences in emulating Major Powell. Ellsworth Kolb's book descriptive of his and his brother's adventures is a fitting companion to the work of the earlier explorer.

There are several trails into the Grand Canyon, and several hotels for the accommodation of guests. The principal trail and the chief hotels are owned and oper-

ated by Fred Harvey, a subsidiary corporation of the Santa Fe Railway, which also operates all the hotels, eating-houses, dining-cars, news-stands and curio stores upon the whole system. The name has become synonymous in the minds of travelers with *super par excellence* in service, the best the market affords upon the tables, at prices commensurate with the service rendered. The situation at the Grand Canyon is somewhat unique. Practically all the water used, even for laundry, bathing and every other purpose, has to be hauled a distance of over a hundred miles. This is a tremendous expense, and would add materially to the difficulty of rendering acceptable service to exacting tourists were it not accomplished by the system and resources of a great railway organization. To keep horses, mules, carriages, tallyhos, automobiles in number sufficient for a large inpouring of visitors is also a problem to task the powers of any other than a great corporation. Yet for years Fred Harvey has met all demands in an admirable manner, so as to call forth unstinted praise from the really discerning and appreciative traveler. Hotel El Tovar is a perfectly conducted hotel of the first class. Bright Angel Hotel is under the same management, but at more moderate rates, with a Fred Harvey café, where meals are served *à la carte*.

At the expense of many thousands of dollars the Santa Fe has constructed a fine rim road to Hermit's Rest, seven and a half miles to the west from El Tovar, and which affords outlooks at Hopi and Mohave Points in passing. The Rest is at the head of Hermit Trail. It is a striking cave-home in the cliffs, but of majestic proportions. The rough and unhewn rocks have been cunningly put into place so that from the exterior one can scarce tell where cliff ends and building begins.

But when you enter the doorway a surprise awaits you, no matter where you have traveled or what you have seen, for you enter a room, forty-five feet wide and eighteen feet high which is one vast cave, hollowed out of the wall, shaped like a dome cut in half, the further base of which is a fireplace, the like of which must have warmed the toes of the giant Vikings when they reached Walhalla. Here on cold, blustering snowy days, which one now and again encounters in winter on the Canyon's rim, one may toast his whole body to his heart's content, and not feel that he is shielding the fire from his fellow guests. Then, when ready, he starts for the new Hermit Trail. I have no intention of describing it here. Suffice it to say it is seven and a half miles of the most perfectly engineered and constructed trail in the whole Canyon — and I know every trail there is in it — and it gives one scenes of incomparable grandeur all the way down to Hermit Camp, where tent-houses are provided for the stay over night. Then it is another mile and a half over an easy trail to the river, where, on the sand or boulders at the mouth of Hermit Creek, one may sit and ponder over the history and mystery of this stupendous Canyon, which for countless ages will remain one of the greatest attractions for man upon the face of the earth.

CHAPTER IX

THE PETRIFIED FORESTS, SUNSET CRATER, LAVA FIELDS AND METEORITE MOUNTAIN

THE *Petrified Forests* always have been a source of great attraction ever since they were first described. The years do not dim their fascination to those who have not yet been privileged to see them. And the more one understands of them, too, the greater is the curiosity and interest they arouse.

There are four areas in which a vast number of logs appear, and these are generally referred to as separate forests. In no case are logs or trunks found standing. They are invariably prostrate, and always split across in irregular lengths, varying from a foot or so to five, six, eight and even ten feet sections, almost as though they had been deliberately felled and sawn into varying lengths, either for lumber or the making of firewood. Another remarkable fact: never is a branch of one of the trees found attached to the trunk, and no trees have the topmost section where the trunk tapers to the thickness of some of the branches. If branches are found, they are away from the trunks, half a mile, a mile, or even more, and then, generally, they are in clusters, or rude masses "huddled" together. The chief fact that immediately arrests the attention of all observers is the brilliant, vivid, and wonderfully harmonious coloring that most of the blocks possess. They surpass the most brilliantly colored marble or onyx, and yet the colors

are neither bizarre nor obnoxiously glaring. They harmonize and give great delight to the most critical eye. Then, too, the observant will see that they were originally buried in a mass of dirty and impure sandstone and different colored sands.

Here, then, are the main facts that any stranger with seeing eyes will observe. The questions that then arise are fascinating in the extreme, some of them hard to answer, and others, almost obvious. I have read every theory I have been able to find, and listened to every explanation offered in my presence, either by scientist or layman. I am not able to say whether the theory and explanations I am now about to offer are original or not. For thirty years the Forests have attracted and allured me. My visits have been many, and my hours of thought upon the various phenomena considerable.

Let me present a series of pictures which may help explain these Forests. The first picture is a forest of tall, stately, beautiful cone-bearing trees, somewhat similar to the small and cultivated Norfolk Island pine. These, however, are sixty, eighty, a hundred, and even, perhaps, a hundred and fifty feet in height, and with spreading bases, from four to twelve and more feet in diameter. The scientists of to-day call these trees *Araucarioxylon arizonicum*. They are now extinct. During the time of their growth here, they were also in existence in the east-central parts of the United States, where the remains of some of their associates have been found in other cone-bearing trees, tree ferns, cycads, and gigantic horsetails.

Rain must have been abundant in those days, or these trees could not have attained such height.

Now, however, let us endeavor to reconstruct, in imagination, the various changes that the centuries have

seen in the life-history of these early arboreal residents upon the earth.

To the mind of the ordinary reader and thinker it would be easy and, indeed, almost natural to picture grasses, ferns, shrubs, and flowers growing under these trees; and to imagine herds of gentle deer, shy antelope or stately elk moving to and fro through the wide park-like expanses. One might go further and dream of gigantic elephants, mastodons, tigers, lions and other species of the carnivora; and it would be easy to see the flying to and fro of birds of all shades and colors of plumage, and to contemplate their nesting, mating and rearing of young in the branches, and to hear their sweet warblings, piercing calls, or flute-like pipings one to another. The scene would be one of peace; everything as happy and serene as an idyllic landscape.

Indeed, this was the picture I had made of the prehistoric forest, until my scientific friends reminded me of the fact that few of the elements of my imaginary landscape were in existence in Triassic times. For, so far as is known, the earliest birds to appear upon the earth did not come until Jurassic times, and no definite evidence of grasses has been found in beds of the rocks so old as the Trias. The Angiosperms, among which are palms and hardwood trees, did not come into existence before the late Jurassic, while such types of animals as deer, antelope, elk, elephants, mastodons, tigers, and lions do not antedate the Cretaceous, and some of them did not appear until Tertiary times.

Hence science here checks the imagination. It puts the stern rein of reality upon the fly-away horses of the mind and brings them back resolutely to gaze upon a world where, while trees existed — those I have pictured — there were no grasses, flowers, or shrubs, no

birds and no animals of the types suggested. How different from the landscape of our time, and how long it took the earth to prepare for the coming of man!

Upon this scene of restricted beauty we gaze. Yet it is not to remain before us too long. A new picture appears. The rains begin to descend. At first the storm is nothing out of the usual, but as the days progress it becomes torrential. The rain pours down, and as the biblical narrator describes it prior to the flood — "all the fountains of the great deep were broken up, and the windows of heaven were opened." Mountains surround this forest of ours, and many great trees grow upon their slopes, but as the rain falls, and the winds and storms arise, they sway to and fro, and one after another, with resounding crashes that, however, there are none to hear, the trees fall into the surging and swirling waters at their feet. The waters ascend higher and higher, until the lighter trees are carried upon their surface; then the larger ones. As the flood increases in fury more trees fall and are carried along by what has now become raging torrents. Seeking their level, the waters dash down ravines, around curves and points, promontories and islands, carrying the trees with them. Rolling, pitching, tossing their branches high in air, first one, then another branch is lopped off. Trunk rubs against trunk with such irresistible fury that great branches, as large around as a man's body, are swept off the parent trunk as though they are but pipe-stems. On they dash and crash until partial quiet is reached in the bed of a newly-created or vastly-enlarged lake, which seems especially prepared to receive them. Pushed along by each other, blown along by the wind, they are spread over the whole area of the lake; in places the wind and fierce currents pile them up, hig-

gledy-piggledy, one above another. The piles of branches are carried off in entirely independent fashion, some to lodge here, some there, according to the wind or water forces that control them.

At last the storm ceases, and slowly the forbidding and lowering clouds sail away. But the mountain sides are denuded, the forest area is washed clean, and the beauty of the landscape we first saw is gone. Yet we feel as if this fierce rainstorm is but the warning, the precursor, of other storms hatching in Nature's secret recesses. Pictures of later storms appear in rapid succession. These storms wash away much of the earth that covers the rugged rocks of which the mountains are formed. Some of these rocks are charged with minerals — iron, copper, manganese, etc. Exposed to the air they decompose and rust, or oxidize. The rain washes down into the log-laden lake small quantities of these rusts, which color the water in every direction, in something like the same fashion as the colors float on the surface of the tub of the marbler, ere he takes them up on his paper. In the mountains, too, there are quantities of silica, and the lake water possessing alkaline properties, namely, soda and potash, when this silica is washed down, it becomes soluble.

Now, our imagination must be stimulated to see secret processes. By the wonderful, but silent, forces of Nature, the wood fibre inside and outside the fallen trunks is carried away, molecule by molecule, and the colored solution substitutes therefor a particle of solid silica, richly colored in the form called chalcedony. This process continues for a year, a hundred years, a thousand, for aught we know — anyhow until all the wood molecules are displaced by the harder molecules of silica colored by the oxidized minerals.

But, during the time this change in the trees has been in process, the earth's crust also has been active. Never at rest, expanding and contracting, rising and lowering, sometimes quietly and slowly, at other times, perhaps, violently and rapidly, the crustal movements are constant. In due time the tree-strewn area is so lowered that it becomes the bed of a great inland sea. Slowly the deposition of rocky matter takes place and the trees are buried at the bottom of this great mesozoic sea. How large an area this sea covered, how far east, west, north and south it extended it is hard to tell, but it was a vast sea. Nor can we determine, in years, how long it existed. But it may have extended as far as where the Missouri River now flows eastward, and correspondingly in other directions. There was no vast range of snow-clad peaks that we now call the Rocky Mountains. That range had not yet been thrust upwards. Its area, possibly, was covered with this great sea.

In the course of time, very little rain fell, and the water of this sea began to evaporate with great rapidity. Then it was that the beds of gypsum and salts found all over this western heart of the United States of to-day were deposited. Where exposed by denudation these gypsum beds are found to be very thick — fifty feet or more — and remarkably pure and white. From these facts the geologists reason that the area of deposition was remote from streams that could bring sand and mud into the sea, and also that the deposition took place at a time of scant rainfall.

It was some time after this that the region covered now by the Rocky Mountains was slowly lifted up and became "a low, nearly level country, covered with tropical vegetation, with many wide, shallow streams

and swampy areas.[1] There had come into existence the giant flying reptiles, the monstrous pterodactyls, a flying dragon measuring eighteen feet from tip to tip of its wings, of which the scientists write:

"On the shores of this ancient sea, lived equally strange beasts and birds of types that have long been extinct, and over its water sailed great flying dragons — the pterodactyls. The animals of that day were strikingly different from those of the present. The birds, unlike any now living, had jaws armed with teeth. The monarchs of the air then were not birds but flying reptiles, whose fore limbs had been modified into wings by the enormous elongation of fingers between which stretched thin membranes like the wings of a bat. These flying dragons, some of which had a stretch of wing of eighteen feet, were carnivorous; they were animated engines of destruction that somewhat forcibly suggest the modern war airplanes, of which they were in a sense the prototypes."

When the uplift took place and the marshy swamps came into existence, the dinosaurs appeared.

"Some of these were the largest land animals that ever walked the earth, and some were very diminutive. They differed greatly in size, shape, structure, and habits. Some were plant eaters; others fed on flesh. Some walked on four feet; others with small, weak fore limbs walked entirely upon the strongly developed hind legs. Some had reptile-like feet; others were bird footed. Some had toes provided with long, sharp claws; others had flattened hoof-like nails. There were dinosaurs with small heads and others with large heads. Some were large and cumbersome; others were small, light, and graceful and so much resembled birds in their structure that only the skilled anatomist can distinguish their remains. Some of enormous size were clad in coats of bony armor, which gave them a most bizarre appearance.

"The largest herbivorous or plant-eating dinosaur whose fossil remains have been found in Como Bluff was the huge Brontosaurus, or thunder lizard, as it was called by Prof. Marsh. It was seventy feet long, stood sixteen feet high at the hips, and had a long tail, an equally long neck, and a head that was only a little larger than that of a horse. The weight of such a creature has been variously

[1] *Guide Book of the Western United States, Part B., Overland Route,* p. 52, U. S. Geological Survey, 1915.

estimated at eighteen to twenty tons. This animal doubtless lived on the luxuriant tropical vegetation, but how its enormous bulk could be sustained by such food as could pass through its ridiculously small mouth has caused much wonder. It is not certain whether the name thunder lizard was given to it because of its size or because of the large sum — over $10,000 — which Prof. Marsh spent in excavating and preparing it.

"Some dinosaurs that are even larger than the brontosaur have been found more recently. A Diplodocus now in the Carnegie Museum in Pittsburgh had the enormous length of eighty-four and one-half feet.

"One of the most striking of the vegetarians of this period was the Stegosaurus, or plated lizard, so named because of the bony plates and spines with which its back was adorned. Some of these plates, although very thin, were from two to three feet in diameter. They were held in upright position in two parallel rows on each side of the middle region of the back, extending from the base of the skull well down on the tail, the tip of which was armed with two pairs of long bony spines. In some individuals these spines were over three feet in length. All the plates and spines during life were covered by a thick, horny skin. The stegosaurs were about twenty feet long and stood about ten feet high at the hips. The head was extremely small and lizard-like in shape, with a small brain, large eyes, and nostrils that indicate a considerable power of smell. The great disproportion in length between the fore and hind legs, the small pointed head, and the skin ornaments of plates and spines, made it so ugly that it may not have required other means of protection. Some passive protection, through repulsive ugliness or otherwise, seems to have been necessary, for its ludicrously diminutive brain suggests a mentality insufficient for conscious efforts at self-preservation. The want of brain capacity was compensated to some extent by an enlargement of the spinal cord near the hips that was about ten times as large as the brain.

"The life of these peaceable plant-feeding animals, however, was not always serene, for there lived at the same time dinosaurs whose powerful jaws armed with long, sharp teeth indicate that their food was flesh. These animals are called allosaurs. That they fed upon large brontosaurs and smaller animals of their kind is indicated by the discovery of teeth of the carnivorus species together with the bones of their herbivorus contemporaries and of a skeleton of one of the herbivorous dinosaurs with bones scarred with tooth marks and grooves corresponding exactly to the sharp, pointed teeth of the allosaurs. The allosaur was a most powerful animal, and skeletons over twenty feet long have been found. The large bones of the

limbs were hollow, as were many other parts of the skeleton, this structure affording greater power of rapid movement. The feet, were armed with long, sharp claws, especially the fore feet, which were well adapted for catching and holding prey or for tearing and rending skin and flesh."

It was in this mesozic sea that the vast deposits of Jurassic and Cretaceous deposits were made which sank the trees of our forest lower and lower. Stratum after stratum was deposited. Deeper and deeper the forest was buried. Would it ever again see the light of day? Sometimes it seemed as if it would, for, uplift and subsidence of the great area were in successive operation several times, as the erosion of the strata clearly reveal. Yet deeper and deeper the buried trees are thrust, until fully ten thousand feet of strata cover them, and it would seem that never again will they be uncovered.

But now a new epoch dawns. The uplifts are steady and continuous — slow perhaps, yet persistent. The Rocky Mountains are born. The great continental area is slowly drained of its waters and the Grand Canyon of the Colorado is created, through which flows the Colorado River. Centuries pass, as we watch, and storm and frost, heat and cold, wind and chemical action, all unite to cut down the rocky surfaces of the region. The river carries away millions of tons of sand, silt, and small rocks, which are washed into its channel by the torrential rains. The inland sea disappears entirely, and its bed slowly arises to great height. The degradation and denudation never cease during century after century. As the uplift continues it appears to "bulge" upwards in the center of the region, as if a huge fist were thrusting up the mass from below, and the earth's crust falls off in irregular slopes from this central upthrust. Years, centuries, roll by

as days, and every day sees the river carrying away its burden of rocky débris, sand, silt, and pebbles.

At last the major portion of the rock strata formed in the bed of the inland sea disappears, and we see, slowly emerging from the repeated washings and scourings of the surface, the logs of the trees that were submerged in the storms of the centuries long-passed. One after another they come into view — but how changed! No longer are they wood. They have become solid stone of many and various colors. The long trunks are split into sections, and lie in irregular fashion, as we saw them when they came floating down into the newly-made lake of long ago.

And here in comparatively recent times man discovered them and ever since has found them objects of his interest, study or exploitation. One firm in Sioux Falls, South Dakota, removed many carloads of the logs, sawed them into sections and polished them so as to reveal the marvelous colorings. These they made into fireplaces, table tops and other useful, ornamental and decorative articles, which have been exhibited for many years at the various expositions throughout the country. Then a Denver firm began the crushing of the logs to make wheels for abrasive purposes, as a substitute for corundum and emery. This latter vandalism so aroused the thoughtful and public-spirited men of Arizona that they memorialized Congress to set the whole of the Petrified Forest area apart as a National Monument. This was done by President Roosevelt, Dec. 8, 1906. The boundaries were then more carefully studied by Dr. George P. Merrill, in 1911, after the U. S. Geological Survey had made a map of the area originally set apart, and he showed that the limits of the monument reserve could be reduced from ninety to forty

and one-half square miles, which President Taft immediately did, by proclamation issued in August, 1911.

The location and names of the petrified wood deposits are as follows: The first forest is about six miles south of Adamana, a small station on the main line of the Santa Fe Railway. The second forest is between two and three miles south and a little east of the first; the third, or Chalcedony Park, some thirteen miles south and a little west of Adamana, while the fourth, or Rainbow Forest, is two miles northwest of the third. All are easily accessible, and he is unwise who does not give himself the privilege and pleasure of seeing all of them, for each has distinctive features not possessed by the others. An easy way to accomplish all that is desired is to visit the first and second forests, including the Natural Bridge, and then drive on to the third forest and camp there over night, thus giving a second full day for the exploration of Chalcedony Park and Rainbow Forest and the return to Adamana.

The first and Rainbow forests are peculiarly interesting in that no continuous log sections can be found here, as occur in the second and third forests. While in all the deposits the trees are split into sections, in the second and third forests the sections remain together as if just separated by the saw, so that one can measure the length of the entire tree. But this is impossible at the first and fourth forests. All the sections are separated and scattered in wild confusion. The reason is not far to seek. When the bed of the prehistoric lake was exposed, in which these logs rested, certain positions of it eroded away faster than others. As the eroded material was washed off and conveyed by the streams to the Grand Canyon, there to be carried by the Colorado River into the Gulf of California, the

THE PETRIFIED BRIDGE IN THE PETRIFIED FOREST OF ARIZONA.

petrified logs appeared in sight. As the washing down continued, the logs would become entirely uncovered, and if they were exposed on the face of a bluff, would soon become dislodged and roll down the slope to the level beneath.

This is what made the scattering of the logs in the first and fourth forests. The erosion of the second and third forests, which lie at a higher elevation, however, has not proceeded far enough to cause this scattering, hence one can here see the vast number and enormous size of the trees after their processes of burial, silicification, and resurrection.

The scattering of the logs in the first and fourth forests is not without its compensation. The exposure to the air and brilliant Arizona sunlight and the polishing processes of the wind-blown sand have materially heightened the colors, and one's eyes are literally dazzled by the richest of yellows, purples, reds, with an infinite variety of shades which tone down to the most delicate tints imaginable. Especially after a rain are these colors made more vivid and striking, and on two or three occasions I have purposely ridden out from Adamana in a rain-storm in order to get the enhancement of the color effects by the water.

Where erosion has taken place the most the more fantastic and peculiar are the shapes and forms assumed by the bluffs that remain. Here and there detached columns, or pinnacles, crowned by some harder material than the surrounding area, stand in lonesome, quaint, odd, and fantastic shapes. The Eagle's Head is one of these freaks of erosion. It occurs in the first forest.

It is also in this forest that the Petrified Bridge is to be found. This is a log lying on the edge of a

mesa, about half a mile to the east of the main deposits. The root portion and upper end of this tree rest in the sandstone capping of the mesa, while the central portion of the supporting rock and earth have been washed away, leaving the tree, an agatized bridge spanning the head of a short ravine for some fifty feet. The total length of the exposed tree is one hundred and eleven feet, the roots resting on a solid ledge for about four feet, with about sixty feet of the upper portion on the other side of the chasm, forty-four feet being the length of the bridge portion. As the top of the tree is missing it is impossible to do more than estimate the entire original length. It has been variously stated as from one hundred and twenty-five to one hundred and forty feet.

The bridge undoubtedly was formed as follows: The tree was embedded in the sandstone which covered the entire region. This covering has been eroded away, and the level of the whole country, except this small mesa, lowered. The tree happened to be near the edge of the bluff, or escarpment, and as the erosive forces continued their operations it was slowly uncovered. The mesa slopes somewhat towards the edge where the tree lies, and when it rains the water flows towards and over the tree, and, carrying with it sand and other rock débris, each storm aided in washing away more of the sandstone that covered it. At length the tree, being more solid than the material in which it was embedded, acted as a dam against the rain and flood waters, and this standing water finally disintegrated the sandstone so that it could flow through underneath the trunk. A hole once formed, no matter how small, the erosion was sure to continue until the result was attained we find existent to-day. The canyon is now twenty feet deep below

the tree, and to prevent the possibility of the "bridge" falling, two piers have been built under it.

It is interesting to note that there is another forest of silicified wood not included in this National Monument. It was originally discovered by Lieut. C. W. Whipple, in 1853, when exploring for a railroad route to the Pacific. Nearly thirty years ago, when that portion of the Santa Fe system that traverses Arizona was known as the Atlantic and Pacific, and it had fallen upon evil days, financially, I was riding on a freight train (they were then few and far between), and the engineer and fireman, and, occasionally, the conductor, would chat with me about the wonders along the line. I had a copy of *Wheeler's Report* with me, and when I read from it the following, the engineer quite excitedly exclaimed: "I know that place. It's not far from Carrizo. Let's go out and see it," and, to my amazement, the train was stopped, and we tramped over the mesa and there found the deposit of petrified trees exactly as described. I afterwards secured a log from this deposit, weighing some three hundred pounds, and it now stands on my lawn in Pasadena, California. The quotation from Wheeler is as follows:

"Dec. 2, 1853. Quite a forest of petrified trees was discovered today prostrate and partially buried in deposits of red marl. They are converted into beautiful specimens of variegated jasper. One trunk was measured ten feet in diameter and more than one hundred feet in length. Some of the stumps appear as if they had been charred by fire before being converted into stone. The main portions of the trees have a dark brown color; the smaller branches are of a reddish hue. Fragments are strewn over the surface for miles."

Wheeler called the creek near by Lithodendron Creek, and he reported the banks as forty feet in height and composed of red, sandy marl, and the width between

the bluffs as seeming nearly a mile. These trees are of a different species from those found in the other forests and are called *Woodworthia arizonica.* The trunks are mostly dark in color, and have numerous pittings on their surface. There is scarce any question but that this forest grew where the trees are now found. There is little or no evidence of flooding, nor of the scattering of the trees. Their roots were loosened by the heavy rain-storms sufficiently to cause them to fall, and silica charged water eventually covering them accounts for their petrification. Dr. George Otis Smith, Director of the U. S. Geological Survey, writes of the charring as follows:

"The charring of the ends and portions of the outer surfaces of some of the trunks referred to by Wheeler should not be attributed to fire. Probably it represents carbonization, that is the transformation of these portions of the logs to coal. The observation of petrified logs in other formations and parts of the world show clearly that the logs were in the process of transformation into coal — generally the initial stages of the process — when the silica was deposited in a portion of the log. In some areas and strata a small part only of the log is silicified, the greater part being transformed to coal, the rank of which corresponds to the rank of the coals in the same formations and area."

Sunset Crater and Lava Fields. For hundreds of square miles in the region of the Petrified Forests volcanic activity is apparent. Mount San Mateo to the east, and the San Francisco peaks to the west, are purely volcanic, and one cannot travel far in any direction without finding large lava flows and extinct craters. One of the most interesting of these craters is to be seen a few miles east of the San Francisco Mountains. It is visible ten miles to the north from the vicinity of Mile Post 337 on the Santa Fe. Its name suggests its peculiarity. No matter at what hour it is seen, or what

the condition of the weather, it invariably appears to be flooded with sunshine. Like a red beacon it stands above the somber-hued surrounding country cheerfully smiling at all hours and all weathers. This bright effect undoubtedly is caused by the oxidization of the iron particles in the rock of which the crest of the mountain is formed, and which possesses a peculiar glowing red color. This, seen in the pellucid and pure air of Arizona, leads to the optical delusion that it is always sunset on this particular peak.

There are other volcanoes in the neighborhood of the San Francisco Mountains. All the slopes from the highest peaks are patched with lava and basalt in columnar structure. Mount Elden, O'Leary's Peak, Mounts Sitgreaves, Kendricks and Williams are all volcanic, as are the Mogollon Buttes on the Painted Desert. Hence it is not surprising to find north of the San Francisco range a large area of lava as black-looking and forbidding as if it had been ejected but a few months ago and had scarcely had time to cool. Closer investigation reveals that sand has blown in and covered much of the lava, and trees, shrubs and flowers have taken root and grown, some to great height.

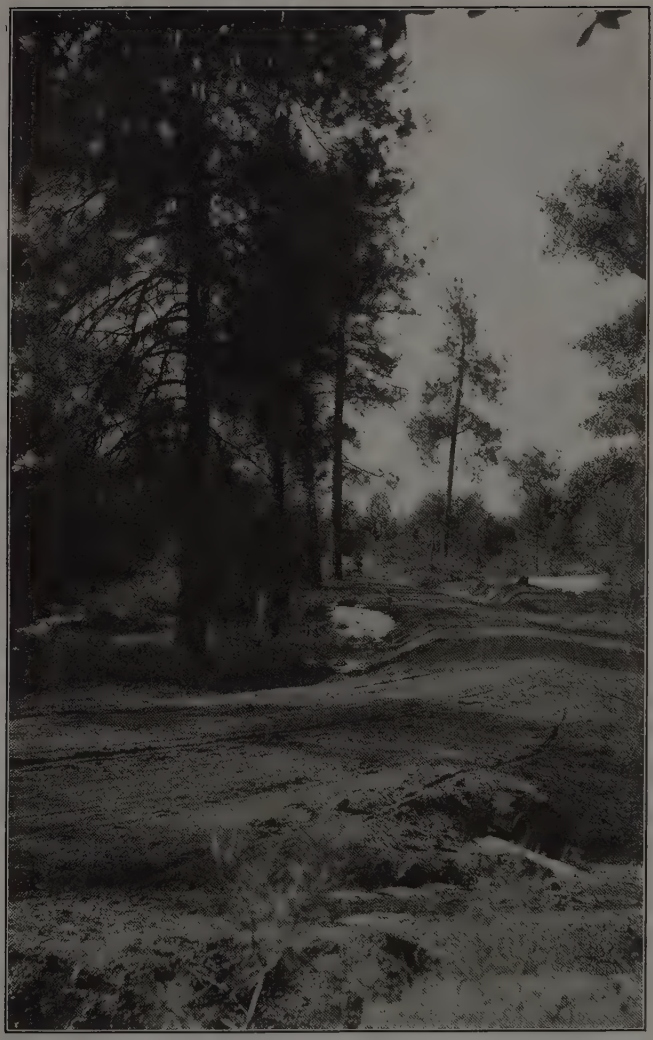
Meteorite Mountain. Ten miles southeast from Canyon Diablo station on the line of the Santa Fé is a peculiar mound, about two hundred feet in height. When one climbs it he finds, to his surprise, that he is on the rim of a bowl, a mile wide, and six hundred feet deep, with an area of forty acres or thereabouts at the bottom. When first seen everyone assumed it to be an extinct crater, but as there were no evidences to support such an assumption, thoughtful people began to look for facts which might explain this most singular phenomenon in a land of singular phenomena.

It was soon found that the surrounding region was covered with large and small pieces and particles of meteoric iron, weighing from a fraction of an ounce to a thousand pounds or more. The theory of the scientists is that a meteorite fell and exploded, thus throwing up the mound, and at the same time scattering the pieces of the exploded meteorite in every direction.[1]

Other scientists suggest that the hole may be due to an explosion of steam from volcanic sources below, accumulating in the pores of the sandstone and finally reaching the limit of tension. This would account for the broken sandstone and limestone constituting the encircling ruin and for the upturned edges of the strata, which doubtless would bend upward somewhat before they broke. The large amount of fine sand produced would result from the violence of the explosion of steam contained in the interstices of the sandstone.[2]

[1] For fuller accounts of the Lava Fields and Meteorite Mountain see my *Our American Wonderlands*, A. C. McClurg & Co.

[2] Guidebook of the Western United States, Part C, The Santa Fe Route. U. S. Geological Survey.



PINE FOREST AND MOUNTAIN ROAD, NEAR PRESCOTT, ARIZONA.

CHAPTER X

THE NATIONAL FORESTS OF ARIZONA

THERE are ten National Forests in Arizona, comprising a gross area of approximately thirteen million acres and bearing a timber stand of seventeen billion board feet of lumber and other forest products. These areas have been set aside and are administered by the Government for the purpose of insuring a permanent timber supply and to prevent the destruction of forest cover which regulates the flow of streams. With fifty million acres of treeless desert tributary to these forests, every square mile of which requires timber products for its full development, and with her whole system of agriculture absolutely dependent on forest streams for irrigation, Arizona may well regard the proper handling of her forest resources as an important factor in her present and future development.

The present stand of timber is estimated, under scientific forest management, to have an annual productive capacity of about eighty-five million board feet of lumber, sufficient to build ten thousand homes each year without diminishing the stand or forest capacity. Forty-five million feet are being actually cut each year. As has been the case in European forestry, the annual production may be confidently expected to largely increase with the practice of better methods of management.

The most dangerous enemy of Arizona's timber and

water supply is fire. Before the creation of National Forests, forest fires burned millions of feet of timber annually. But now, with extensive systems of lookout towers, telephone lines, and trails, the Forest Rangers are enabled to detect and reach them with promptness. Over ninety per cent. are extinguished before they have spread to ten acres.

The menace of destructive conflagrations, however, still exists, and its extent must be seen to be appreciated. During the dry spring of 1916, for instance, fires broke out on the Coconino Forest alone at the rate of twenty per week. Out of over one hundred, only two exceeded ten acres before they were extinguished. Out of two hundred fires throughout the State during the same period, practically *all were caused by carelessness with matches and camp fires.* This condition necessitates a continuous publicity campaign by Forest Officers, of which "Prevent Forest Fires" is the slogan.

But timber and water are by no means the sole end in view, nor the sole useful product of Arizona's forests. As pastures for livestock, as homes for the settler, as hunting, fishing, and recreation grounds for the city-dweller and tourist, and as sources of mineral wealth and water-power, they are of hardly lesser importance.

Arizona's forest ranges support six hundred thousand head of cattle, horses, sheep and goats, from which the annual meat product alone would feed a city of half a million population. At least thirty thousand families derive their livelihood from this industry. But the most important feature of the forest ranges is that they constitute a resource of growing productive capacity. The grazing regulations prevent the unfair competition which has been so destructive to the "open" grazing lands,

and, as a consequence, each square mile of National Forest supports a steadily increasing number of live-stock, and under scientific methods of range management produces each year a steadily improving grade of beef, mutton, or wool. The annual gain in volume of product has been close to three per cent., while the gain in quality, though not so easily measurable, has been much greater.

The mountain valleys traversing the National Forests naturally embrace a considerable amount of land suitable for agriculture. The greater part of such lands were taken up by homesteaders previous to the establishment of the Forests, and most of the remainder has since been taken up under the Forest Homestead Law. While few opportunities for homesteading are left, the opportunities for more intensive development of lands already taken up are unlimited. These mountain valleys are productive, particularly at the lower elevations where fruit and berries can be raised. The valleys of the southern forests also seem to possess marked possibilities for raising English walnuts, which are grafted to the hardy native walnut stocks.

As hunting, fishing and recreation grounds, Arizona's forests have a usefulness which is only beginning to be understood. Their beautiful scenery and bracing summer climate, within easy reach of the hot valleys and business centers, inevitably make them the natural playgrounds, not only of Arizonans, but to a large extent of the people of neighboring States. Three factors have operated to delay their full development for recreational purposes. First, Americans heretofore have measured play-grounds by their distance and costliness, rather than by their proximity and cheapness. They are now learning better. Second, Arizona, like other States, has al-

lowed her naturally abundant stock of game and fish to be almost swept away by illegal and unscrupulous hunters. Signs of a complete reversal of attitude are now apparent. Third, the forests have been inaccessible for lack of roads and trails. The good roads movement is very rapidly overcoming this obstacle. In general, it may be said that Arizona's forests offer attractions to the vacationist quite unduplicated elsewhere, and that each year sees an improvement in the facilities for enjoying them.

Not the least of these improvements is the recent Act of Congress authorizing long term leases of forest lands for summer home sites. The mountain forests of Arizona contain ideal locations for tens of thousands of summer camps and cottages, any and all of which can now be leased from the Forest Service at nominal rentals (ten dollars to twenty-five dollars). Lots up to five acres in area are allowed. Ordinary temporary camps are, of course, free of charge, as is also wood, and pasturage for the camper's animals.

The demand for cottage sites is being anticipated by the advance survey of lots in especially favorable locations, such as, for instance, Oak Creek and Lake Mary near Flagstaff, Soldiers' Camp on the summit of the Catalinas near Tucson, and Reynolds Creek in the Sierra Anchas near Globe.

THE APACHE NATIONAL FOREST

This forest has been described largely in the chapter on the White Mountains, to which the interested reader is referred.

THE SITGREAVES NATIONAL FOREST

With the exception of a fringe of pinyon and juniper along its northern edge, the Sitgreaves Forest, embrae-

ing nearly a million acres of the eastern end of the Arizona Plateau, is practically one continuous belt of exceptionally fine yellow pine timber. The total stand is upwards of two and one-half billion feet.

The nearest railroad is fifty miles to the north; consequently, practically none of this timber is being cut. It is inevitable, however, that a railroad will be constructed in the not far distant future. The timber is mature and ready to use. Its quality is exceptional—mostly four and five log trees. These facts, taken together with the enormous volume available, make it safe to predict the development of one of the greatest lumbering operations in the United States. This is a great surprise to those who regard Arizona as the arid, barren, desolate, desert state. Even many Arizonans are ignorant of the vast amount of timber their state possesses.

Unlike timber wealth, grass goes to market under its own motive power. Consequently, we find the grazing ranges of the Sitgreaves Forest quite fully utilized. Permits to graze eleven thousand cattle and seventy-seven thousand sheep are issued yearly. An especially fine grade of lambs is produced.

The Sitgreaves has a fair stock of deer and turkey and a few trout, but the most interesting feature of its game supply is the herd of Yellowstone Park elk located at its western end. These were liberated in 1913 by the joint efforts of the State Game Warden and the B. P. O. E., and have done very well in spite of considerable poaching by unscrupulous hunters. Nearly forty calves were seen in 1915. With proper protection this herd may be expected to eventually re-stock the entire central plateau from the Grand Canyon to the Rio Grande in New Mexico. They have already scattered from Flagstaff to the New Mexico line.

THE COCONINO NATIONAL FOREST

In volume of business, as well as in extent and variety of resources, this forest, covering over a million and a half acres of the Coconino Plateau, is one of the most important in the United States. The timber stand is no less than four billion feet, of which twenty-three million feet are cut annually by three of the largest sawmills of the Southwest. In addition, forty-five thousand cattle and over ninety thousand sheep are supported by its grazing ranges.

As a pleasure ground for the tourist, the Coconino Forest is in process of rapid development. Trans-continental travellers will soon have access to the famous San Francisco Peaks, up which a private company, operating under Forest Service permit, is building a motor road. With an elevation of over thirteen thousand feet, the view from these peaks is easily one of the wonders of the Southwest.

Along its southern edge, the Coconino Plateau breaks off toward the desert in a huge escarpment known as "The Rim." Numerous mountain streams, flowing southward, have carved this almost mile-high wall into a series of deep and rugged canyons. Most beautiful of these is Oak Creek.

Here the climate of the mountains meets and overlaps the vegetation of the desert in a most surprising and bewildering manner, and evolves as a net result one of the most beautiful spots in Arizona. Here are found mountain forests, mountain water, mountain ferns, and mountain wild-flowers in full perfection, actually side by side with huge oaks, sycamores, walnuts, mescal, manzanita, and unique desert forms. Great alder trees add a touch of Oregon. Sturdy hornbeams and

IN THE COCONINO NATIONAL FOREST, ARIZONA.
Seen from an elevation of 10,500 feet.

dogwoods bespeak the Appalachians. Violets and spring beauties remind one of New England. And in the picturesque little ranches which line the stream, one sees glimpses of the whole world, from England to the Orient. It is safe to state that Oak Creek is the only place in the Southwest where speckled trout and desert cactus, alpine firs and Oriental figs, mountain pines and greenhouse roses, English ivy and Virginia tobacco, together with nuts, berries, and fruits of all descriptions are all found growing on a forty acre lot.

Oak Creek is already a favorite camping-place for hundreds of people, and through its unique attractions is destined to become one of the most popular summer resorts in the State. The Forest Service has ready for lease a large number of lots for cottage sites which better roads will soon make accessible by motor from all parts of the State.

THE TUSAYAN NATIONAL FOREST

The Grand Canyon of the Colorado is the outstanding feature of this forest, which covers nearly two million acres at the western end of the Arizona Plateau. The Colorado River is its northern boundary.

Entirely aside from the Canyon and its value to the general public, the Tusayan Forest supports local industries of large importance. Its timber supplies large sawmills, cutting twelve million feet per year, while its grazing ranges support over twenty-two thousand cattle and seventy-two thousand sheep. Some of the largest steers from Arizona are produced in the Tusayan Forest.

THE KAIBAB NATIONAL FOREST

This forest is in "The Strip" and is administered from Ogden, Utah. Consequently, we have little first

hand information about it. Its area is about one million acres. It supports many cattle and has a great amount of fine yellow pine timber which is attracting the attention of lumbermen. There is talk about a special railroad to take out this timber to the northward.

The " Strip " is the name given to that part of Arizona that is on the northern side of the Grand Canyon, and consequently, practically cut off, to all intents and purposes, from the rest of the State.

THE PRESCOTT NATIONAL FOREST

The first purpose of the Prescott National Forest is to protect the watershed of the Verde River and other streams tributary to the great agricultural regions of the Salt River Valley. Grazing is accordingly regulated with particular caution, but nevertheless the Prescott ranges support no less than fifty-four thousand head of cattle and seventy-one thousand head of sheep. Grazing permits for cattle are particularly prized by reason of the value of this country as a breeding range. The warm climate and sparse but rich feed offer just the environment necessary to produce a maximum percentage of calves. Bloody Basin, which is one of the Prescott grazing units, has been called by experts " the best piece of breeding range in the United States."

The cattlemen of the Prescott are well organized, and their Advisory Boards, appointed to cooperate with the Forest Service in the handling of range questions, furnish a splendid example of the manner in which the Government and the stockmen are working together for mutual advantage. A high degree of scientific range management is attained on the Prescott ranges. The stockmen not only help to enforce the forest regulations, but the Forest Service helps to enforce various

special rules promulgated by the stockmen themselves. Matters pertaining to roundups, drift fences, salting, steer sales, etc. are thus settled by cooperative action, with resulting benefits to all concerned.

It is a common saying in these days that the stock business has been shorn of all romance, and that the picturesque cowboy or sheepman is a thing of the past. This is true to a large extent, but those who believe it wholly true have never seen the "driveways" of the Prescott.

These driveways are the scene of one of the most striking features of Arizona's livestock industry;—namely, the semi-annual migration of sheep between their winter ranges on the desert and their summer-ranges in the mountain pastures of the Coconino, Tusayan and Sitgreaves National Forests. Nearly three hundred and fifty thousand sheep annually winter and drop their lambs on the desert, subsisting on the famous "filaree," which springs up like magic under the winter rains. Under the spring drouth it vanishes with even greater suddenness. At this moment the sheep must go north, and north they go, over two hundred miles of rough trails, arriving just in time for the lambs to fatten on the lush grasses and weeds which follow the melting snows. In July the fat lambs are sold, and in the fall the ewes again go south.

THE TONTO NATIONAL FOREST

Like the Prescott, the purpose of the Tonto National Forest is principally the protection of the Salt River watershed. In this case, however, the importance of proper administration is further intensified by the fact that the larger part of the Forest area (over two million acres) drains directly into the Roosevelt Reservoir,

the undue sedimentation of which would be a public misfortune too obvious to require comment.

Cattle raising is the predominant industry of the Tonto Forest. Permits aggregating nearly sixty-nine thousand head are issued yearly. Here, again, is a quality of range peculiarly adapted to cattle breeding, and capable of producing a calf crop much greater than the lush grasses of the northern mountains, although the latter, to the casual observer, would appear infinitely superior.

The Tonto Forest furnishes a good example of how National Forest receipts from grazing permits, timber sales, etc., redound to the benefit of roads and schools. With funds derived from the Arizona Forests, the Forest Service is just starting the construction of a new highway from Heber, on the Sitgreaves, to Lake Roosevelt, the first twenty-five mile section of which will cost about $40,000. This road will furnish the first real connection between the two great regions lying above and below "The Rim" respectively, and will also make accessible by motor many locations for summer homes for the people of Globe and the desert country.

THE CROOK NATIONAL FOREST [1]

This Forest lies in three divisions, covering the Santa Teresa, Pinaleño, and Galiuro Ranges, and aggregating nearly nine hundred thousand acres. The highest point is Mount Graham, which is covered with heavy stands of fir and spruce. The principal industry is grazing, permits for eighteen thousand cattle being issued annually. While there are no large mills, the wood products are in large demand by reason of the extensive agricultural districts in the adjacent valley.

[1] Named after General Crook, the Indian fighter,

The city of Safford derives its water supply from the adjacent Forest watershed, which is administered under a cooperative agreement between the city and the Forest Service. The agreement provides that the city shall make its own special regulations to prevent the pollution of its waters, which, after approval by the Forest Service, are enforced by the local Forest officers. The extra cost over and above the ordinary cost of administration is paid by the city. This arrangement exemplifies the manner in which any city can give special protection to its water supply through cooperation with the Forest Service.

THE CORONADO NATIONAL FOREST

The Coronado Forest lies in five divisions, covering the mountain ranges of southern Arizona from the Santa Catalinas to the Tumacacori Range. The larger part of the Forest area of one million acres is of comparatively low elevation, but the summit of the Catalinas rises above nine thousand feet. Covered with a fine forest of pine and fir, with good water and a delightful summer climate, these mountains assume a place of special importance in their relation to the city of Tucson and the hot deserts of the surrounding country. Hundreds of Tucson people already rely on the Catalinas as a refuge from the summer heat, and only the absence of a good road up the mountain prevents its like use by thousands. Given a road, and the forest will soon be dotted with hundreds of summer camps and cottages.

The need for such a road has been overlooked neither by the Forest Service nor the public. Pima County has already voted a bond issue of $100,000 for its construction, and the Service has already surveyed

the route. When constructed, this road will climb the mile-high wall of Mount Lemmon with a maximum grade of eight per cent. There will be two series of switchbacks. The view from the summit has been described as among the most beautiful in the Southwest.

The grazing ranges of the Coronado Forest support twenty-three thousand cattle and seventeen thousand goats. The timber stand is about two million cords of wood, in addition to a considerable amount of saw-timber, most of which is at present inaccessible.

THE CHIRICAHUA NATIONAL FOREST

This Forest lies in the extreme southeastern corner of the State, and extends into New Mexico. It covers a series of rugged mountain ranges, whose summits are covered with pine timber of fair quality. The lower slopes bear about two million cords of wood unfit for saw-timber but nevertheless of large importance to the great expanses of treeless country surrounding. The Forest supports about twelve thousand cattle and a few goats.

There are many beautiful canyons reaching back into the Chiricahua Mountains which are already popular as camping grounds for parties from Douglas and other near-by towns. A number of them offer excellent sites for summer homes.

CHAPTER XI

THE WHITE MOUNTAINS OF ARIZONA

Though the White Mountains are included in the National Forests or Indian Reservations, they are entitled, by their very uniqueness, to a special chapter.

It would be utterly impossible to convince the man who knows that he knows without study or observation that, in the heart of the so-called *arid* eastern Arizona there is a range of mountains, surrounded by an elevated plateau covered with richest forests, where one may wander for days and weeks by the side of limpid and pure streams (save in the rainy season) abounding in the gamiest kind of trout; where he may stroll, ride, or drive through open forest-parks of pine, fir, spruce and balsam, with deer and antelope, wild turkey and blue grouse in sight every hour; where grizzlies and other bears are easily to be found by good hunters; where peaks, nearly twelve thousand feet in height, can be seen *snow-clad* during fully seven months of the year; where it is cool and delicious in the middle of the summer; and where, to give touches of romance, two, three decades ago, roamed the fiercest, most cruel, relentless and vindictive savages known in American history, and who are now living there in perfect peace and quietude, and where countless prehistoric cliff-ruins are constantly being discovered that have never, as yet, felt the desecrating touch of the white man.

Such a claim does seem preposterous. Yet, strange

to say, it is literally true. The White Mountain region of Arizona is as absolutely *sui generis* in the United States as are Glacier National Park, the Grand Canyon of Arizona, the Yellowstone, or the Yosemite. It has no eastern counterpart, for its average elevation is nearly as high as is the summit of Mount Washington, which is the one towering mountain of all the East, all the North, and all the South of our great country, and all the Middle West, until one reaches the Rocky Mountains. In other words, the general elevation of the plateau country of the White Mountains is between six thousand and seven thousand feet above sea-level, hence its individualistic and wonderful characteristics.

Geographically the White Mountains (which take their name from the annual seven-months' covering of snow under which they are buried) are an extension of the so-called "Mogollon Rim" which rises on the Mogollon Mountains of New Mexico and extends in a westerly direction across the east-central portion of the State. Geologically, this "Rim" is the result of a terrific volcanic upheaval in the Tertiary Age, and its volcanic origin is seen in the fantastic rock formations and the lava-strewn canyons and river valleys.

The largest remaining and virgin forests of western yellow pine, followed in turn at the higher altitudes by the Alpine species of Douglas fir, Engleman spruce, blue spruce and cork-bark fir, densely cover these mountain slopes, and the memory of those now living will confirm the statement that I have seen great herds of elk, mountain-sheep, deer, and antelope, and many bear, roaming fearless and afraid, in these vast desert solitudes. To-day even, for the sportsman who is willing to expend the necessary energy, bear (brown, black and even of the grizzly variety) can be found in addition to

black- and white-tail deer, mountain lions, wild turkey (the latter especially abundant), ducks by the score of every known variety, and wild geese. The State of Arizona is just awakening to the fact that it has within the White Mountains a sportsman's paradise, and a renewed effort to protect the remaining game, in cooperation with the officers of the United States Forest Service, is being undertaken in order that this valuable asset may not entirely disappear.

Well do I remember when a friend of mine brought down with his rifle a forty-pound wild bronze turkey. It was as plump as ever tame turkey found itself, and its meat was rich and delicious with the pinyon nuts it had fattened upon. There were only two of us, but how do you think we cooked that turkey? In the orthodox, Parker House, Waldorf-Astoria, Walton, Fairmont fashion? By no means. In the White Mountains even civilized men learn to follow Apache methods. A pit, three feet deep, was dug, perhaps two feet in diameter. Into it dry sticks and wood were placed and set on fire. Soon a bed of hot coals was provided. In the meantime the turkey was covered with a coating of thick mud — head, feathers, tail and all. This turkey mud-ball was now placed in the hole, on the bed of hot coals, more coals placed on top of it, a layer of earth covering the whole mass, and then left for an hour or so. Then the earth and ashes were scraped away and the hot mud-ball removed. When the mud — now dry and caked hard — was taken off, the whole skin with its load of feathers was removed easier than an orange is peeled, and there the rich, juicy, delicious meat of the bird was exposed. By cooking in this manner all the flavor and juices are kept — nothing escapes into the air — and though one who has not tried it may question

the statement that the most critical taste cannot discover the slightest taint or odor from the feathers, etc., yet every one who has tried the method can vouch for its accuracy.

In the vast forest area of the White Mountains other game birds abound. Scores of blue grouse and Mearns' quail are to be seen. These latter fascinating birds alone make a trip to the region worth while both to the sportsman and the ornithologist, for few there are who have ever seen the Mearns' quail, much less in quantities sufficient for shooting.

There is little or no chaparral in the forest as is found so common in most forest areas in California mountains. Here the trees stand almost as if planted at proper distances apart. One can easily imagine himself in an old English park, unvisited and abandoned, perhaps, but still clearly showing its ancient planting and usage. In the hottest days of summer on the desert plains of the southern part of the State, or when travelers on the brink of the Grand Canyon feel the heat surging up from the sun-scorched rocks below, one may ride for hours, as fast as he and his horse care to go through the wide open parks of this region, and the temperature seems made to order. The air is cool, refreshing, delicious, yet sun-kissed, vivifying and as life-giving as a champagne that has no evil after-effect.

There is excellent fishing in the head-waters of the Little Colorado River — for it is a very different stream up here from that which trans-continental travelers know as the Little Colorado near Winslow. *There* it is a dirty, filthy, muddy stream that meanders lazily along in its sandy bed, quickened only in the time of heavy rains and mountain freshets, with an occasional cloudburst,

A LAKE ON A FOREST RESERVE IN ARIZONA.

but *here,* it is clear, sparkling, pure, cold, fresh from the snowy fountains of serene mountain heights. Yet this statement would be misleading were it not qualified by reference to the rainy season. When it rains the surface drainage flows into the streams and makes a "rich mud brown" color, but they soon clear up and repossess their original purity.

The chief fish caught is a rare creature, the *salmo plueriticus,* a trout that is found only high up in the mountains where the Little Colorado River has its rise. The largest specimen I have ever heard of was caught by a Mormon settler, and it weighed eight pounds, seven ounces. Two and three pounders are quite common, and the Arizona anglers from Phœnix, Tucson, and other cities of the south and of Holbrook, Winslow, and even Flagstaff on the north, gain many a day's sport in seeking to lure these speckled beauties from their watery home.

In addition to the Little Colorado there are a score of smaller rivers and creeks, which often abound in trout. There are the Blue River, San Francisco River, and Willow, Freeze-Out, Bonito, Malapais, Clover, Forestdale, Turkey, Silver, Coyote and other creeks galore.

On the south side of the region are the White and Black Rivers equally as attractive as the Little Colorado, the Black being the upper reach of the Salt River itself. Both the Salt and Gila Rivers have their rise in this elevated forest land. The Gila heads in on the east, beyond the Peloncillo Mountains, receiving some of its earliest waters even from Grant County in New Mexico. Flowing slightly northwest it passes through the break between the Gila and Peloncillo ranges, striking southwesterly for a short distance, then northwest almost

parallel to the course of the Arizona Eastern Railway until San Carlos is reached, in the San Carlos or White Mountain Indian Reservation, where it sweeps again to the southwest as far as Winkelman. Winding and twisting it flows on past Florence, and the Casa Grande ruins, passing through the Gila River Indian Reservation, and then follows an almost due northwesterly course until it comes to where the Salt River joins it a few miles west of Phœnix. Twenty miles beyond it makes the great curve, known as the Gila Bend — a name given to a town, an Indian Reservation, a range of mountains, as well as to the course of the river — and from thence on, until it joins itself to the muddy waters of the Colorado Grande at Yuma, it flows much as other rivers flow in the cultivated and civilized lands. Never, in the whole of its course, does it flow to a higher parallel than Phœnix, so that it is distinctly a southern Arizona river.

Practically the same may be said of the Salt River, though it has a slightly higher general parallel of flow than has the Gila. It rises in the region of Greer, where Ord and Thomas Peaks soar upwards, ten thousand two hundred and sixty-six feet and eleven thousand four hundred and ninety-six feet respectively, flows to the north of Natanes Plateau, to where the White River and Carrizo Creek unite with it and finally flows into the Roosevelt Lake. Some ten miles further south the travelers over the famous Apache Trail automobile stage-line first catch sight of its sparkling waters. Thus both rivers flow from east to west, and both are within the 33rd and 34th parallels.

In addition to the headwaters of these streams there are many large reservoirs, made by the Mormon settlers, and these waters also abound with trout, so that

anywhere in the region good angling generally may be obtained.

The Mormons early settled in this region even while the Apaches were on the warpath. They have established many good farms and laid the foundation for a great agricultural and stock-raising empire. In this they are now ably seconded by their whilom enemies. In nothing in Arizona history is so marked a contrast to be observed as there is between the Apache Indians of today and of three or four decades ago. Then they were the Ishmaels of the western world. Every man's hand was against them, as theirs was against every man. Now they are farmers, ranchers, stock-raisers and workmen for others. They are the most reliable help one can obtain in the State, for out-of-door labor, and are faithful, diligent and trustworthy. It is a joy to a believer in the solidarity of the human race to see these Apaches developing into responsible citizenship.

Several sawmills are operated at the foot of the White Mountains upon which there is an almost inexhaustible supply of virgin timber, and this is sold in large quantities by the Government to both the settler and the lumberman. It is only within the past few years that lumbermen have begun to realize the possibilities of logging the timber from the White Mountain region. Recently a possible route for a railroad from Holbrook, Arizona, to the heart of this timber has been examined and inquiries to Forest officers as to the quantity and quality of the timber are of frequent occurrence. It will only be a matter of time before this entire region will be made yet more accessible to the lumberman, business man, or recreationist.

In addition to the timber and forage, and its possibilities for hunting, fishing and camping, the White

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Mountains contain still another undeveloped asset, for within the streams which have their source therein, are unlimited water-power possibilities. The Little Colorado and the Black Rivers are both available for power development, and upon both streams applications for preliminary power permits are about to be issued by the Forest Service.

Another of the rare charms of this region to one type of mind is the fact that it is an almost unexplored cliff-dwelling region. These quaint prehistoric homes of the past are found everywhere, and recently in grading a road not far from Greer ruins were found from which it is said a wagonload of ancient and very valuable pottery was removed. As before explained, it is a volcanic region. Mount Ord, Mount Thomas and the great Prieto Plateau are clearly created by the fires of Pluto, when Mother Earth was spewing forth molten masses from her fiery mouth. There are a number of extinct craters, in the bowls of which tiny lakes and delightful groves now nestle, and many a mile one may follow the lava flows, in as picturesque bewilderment as is found in the wonderful region around Mount Zuni and Mount San Mateo, in New Mexico.

In many of these flows, too, interesting caves have been discovered, some of which have been explored for a mile or more. And these caves were used as homes by the prehistoric dwellers of the region. Scores of fine ollas, bowls and other shapes of pottery have been found; also large pieces of woven cotton cloth, hanks of spun cotton, woven matting, corn,— corn-cobs, fetiches, and beads in great quantity, very similar to those found in the cliff and cave ruins which dot Arizona in every direction.

Mount Thomas undoubtedly was a shrine for these peo-

ple, for here fetiches, together with thousands of wampum beads and pieces of turquoise have been found. Some of these have been bored with so small an instrument that they can be strung on only the finest silk thread.

Naturally the skeptical, the curious, and the intelligently inquiring desire to know how these delectable mountain regions may be reached. There is a regular automobile mail stage between Holbrook, on the main line of the Santa Fe to Springerville, and automobilists may follow that stage road. From the south one may go from Phœnix to Globe, or Tucson to Globe, the latter being a new road by way of Oracle, Winkelman and Christmas, through the Box Canyon of the Gila River, the Pinal range, and then from Globe to Rice, twenty-two miles, over a fine automobile road, and by the side of the Arizona and Eastern Railway. Now the traveler leaves the railroad and begins to climb the first plateau of the White Mountains. Fifteen miles away he comes to Casadora Springs on Sycamore Creek, where he may pitch his tent in real wilderness. Seven miles more of climbing brings him upon the second plateau, among the pines, where the U. S. Government sawmill is located that has made lumber for the building of the homes for the Indians. Twenty-one miles farther Black River is crossed on a new bridge with strong concrete piers. While this is called the Black River it is really the Salt River in its upper reaches. Then there is the White River, five miles away, where a good bridge gives one easy and safe crossing. Twenty-one more miles brings one to Fort Apache, where Uncle Sam keeps a company of soldiers as a reminder of old days, when there were about as lively scenes transpiring in this region as one ever wished to participate in. Three miles north of the

Fort is the White River Indian Agency, where Judge Crouse, the agent, has made many friends by his geniality and kindliness. He issues the fishing permits, without which no one may fish on the reservation. The next stop is twenty-one miles away, at Cooley's. Here one finds the old pioneer scout, full of stories of the Apache raid days, and who, with his hospitable family, takes good care of guests and travelers, whether they are passing by and stop but for a meal, or come for a month. Here at about seven thousand, five hundred feet altitude the air is ever pure, cool and refreshing, and it is one of the healthiest spots on the face of the globe. The flowers that adorn the Cienega — the name given to the ranch — are exquisite and glorious and make the place in summer time a perfect floral paradise.

One must go from here to see White River Falls, a beautiful thirty-foot waterfall, which is about sixteen or eighteen miles away, near which — say two miles away — one finds an excellent camping and fishing place where trout are abundant. Pinetop, fifteen miles away, is the next stopping-place. It is a Mormon settlement, largely peopled by Penrod, a pioneer of 1886, whose descendants till the soil, raising grain and vegetables, which find a ready market at Fort Apache.

Now for ten miles one is on a road where pine, fir, and quaken aspen abound, making this a pure forest road of exquisite shade.

I should have mentioned that from the Cienega one has wonderfully clear views of Thomas Peak and Mount Ord, which are the second and third highest mountains in Arizona. There are trails leading to the summits of each of these, built by the rangers, and from these elevated viewpoints one may secure views of the surrounding country that are beyond description.

The road to Springerville is a fairly good mountain road, and one can thence continue on over to the northern edge of the White Mountains, coming out either by way of St. John's, or Shumway, Taylor, and Snowflake to Holbrook.

The road from Globe or Rice will ultimately be made a part of the regular automobile road of the Wonder Circuit, but even if one should find himself upon it with the handicap of bad weather, the most blasé traveler of earth will declare the journey soul satisfying. I am a poor prophet if, in every case, the man, or woman, who values knowledge of a new and enchanting land enough to endure a little fatigue and discomfort in order to reach it, does not return from this White Mountain region full of happy and delightful memories that he, or she, will always be glad to renew, for I know of no more delightful region for a camping-out trip on this footstool. One can go to Springerville and there secure a complete outfit, and, if necessary, competent guides, horses, pack animals, etc., and in a short time gain such new health and vigor as was never before possessed. I venture the prophecy that within the next twenty years this will be one of the most popular stopping-places for the transcontinental tourist to be found in America, and the one that will give the greatest and most lasting satisfaction.[1]

[1] Since writing the above I have learned that the Becker Company, of Springerville, who have long outfitted those who were aware of the delights of the White Mountains, are now erecting a substantial hotel to take care of the increasing number of visitors flocking to this delectable region.

CHAPTER XII

THE ARIZONA WONDER CIRCUIT

THE automobile is one of the strongest incentives to the making of good roads, and where there are good roads a country soon becomes accessible. That Arizona is a wonderland I am assured no person will doubt even though he but hastily skims over the pages of this book. Yet many who live in Arizona, as well as tourists hastily passing through, have little conception of many of its scenic, historic and antiquarian allurements. A movement is now on foot (early in 1917) which, if consummated, as there is every reason to believe it will be, will open up new country to the sightseer, attract many thousands to Arizona and give to the transcontinental traveler, both by railway and automobile, an opportunity to see as astoundingly varied, as picturesque, as remarkable, and as wonderful a land and its people as are to be found anywhere on the globe.

Let me briefly outline the plan as at present contemplated for the survey of this "Wonder Circuit." Starting at Phœnix, the capital of the State, the road followed will be through Cactus Park, Mesa and Tempe, by the Superstition range of mountains, down the Fish Creek Hill, over the Apache-built road to the Roosevelt Dam, then to Miami and Globe. Time could be taken at the two latter cities to visit the large copper mines which rank with the largest and greatest producers in the world.

Then from Globe the road will proceed to Rice, across the White Mountain or San Carlos Apache Indian reservation, thence to Fort Apache over the Natanes Plateau to Springerville. This part of the trip will be a surprise to visitors, no matter how widely traveled, or what they have seen. It is the wonder-heart of the wonderland.

From Springerville the road is through a region of great fascination and interest to Adamana, near where the Petrified Forests are located. Here these wonderful fossil forests can be thoroughly explored, together with the quaint pictographs, cliff-dwellings and other ruins that are found in abundance.

Thence to Holbrook, where a slight detour will give one the opportunity of seeing the interesting prehistoric village of Homolobi, excavated by Dr. Jesse Walter Fewkes, of the Smithsonian Institution, and from which some of the most interesting and valuable prehistoric pottery of the Western Continent was gained. Over the Painted Desert the road will run, giving one glimpses of God's original paint-pots and testing pallette, until Keam's Canyon is reached, where is located one of the government schools for the education of the Hopis, the Quaker Indians of Arizona. From this point the Wonder Circuit might be made to include a trip to and up into the heart of Canyon de Chelly, for many years regarded as the impregnable stronghold of the Navahos, and conceded by all who have seen it to be one of the most stupendous and awe-inspiring pieces of canyon scenery known. Here were first found and described by Lieut. Simpson, some of the noted cliff-dwellings of Arizona, upon which scientists and others have written most fascinatingly. Monument Canyon and Canyon del Muerto, the latter with its mummy caves and the former with its legendary Spider Rock, are both off-

shoots from Canyon de Chelly, and a large number of blanket-weaving Navahos make these canyons their permanent home.

Made at certain times of the year, this trip might enable the traveler to see one or more of the astounding ceremonial dances of the Navahos. The Snake Dance of the Hopis is not more unbelievable than the Fire Dance of the Navahos, and the Yebichi Dance of the latter is as gorgeous, varied, elaborate and fascinating as the Lelentu- or Flute-Dance of the former. Few, even of Arizonans, have ever been privileged to see these dances, for the Navaho, even far more than the Hopi, are a jealous and conservative people, preferring to conduct their religious ceremonials in secrecy where the eye of the white man is not supposed to see.

Returning to Keam's Canyon — or going by an even more wonderful route via Kayenta, a few miles from which are the stupendous cliff-dwellings of Betatakin and Kitsiel and thence to Tuba City,— the seven villages of the Hopis will be reached, where these People of Peace have long dwelt, carrying on their quaint and startling ceremonies that Americans are now beginning to appreciate. The Snake Dance is already quite well known, but there are a score of other beautiful, quaint, archaic and surprising dances, with which a lore is connected as elaborate as the mythology of Greeks, Romans and Norsemen combined. The pantheon of their gods too, comprises as many gods and lesser divinities, as these three countries of ancient days. In their home life they are no less interesting. To see the women build the houses while the men sit and look on, or, perhaps, fill up the time by knitting the soleless stockings for the family; to witness them at work in their pathetic little cornfields; to hear them singing in concerted unison as they

ON THE BORDERLAND HIGHWAY BETWEEN NOGALES AND TUCSON, ARIZONA.

grind their corn on the primitive mills, or metates, of a thousand years ago; to hear the mothers instructing their daughters in the duties of wife- and mother-hood as they fix up their hair in the peculiar fashion for which they are noted; or to hear father or mother, elder sister or brother telling the children of their vast number of greater and lesser divinities, using for that purpose the *tihus,* or dolls, of which they have over three hundred different varieties; to see the women make their baskets covered with striking geometrical designs, or paint their pottery with quaint and archaic symbols; these and a score, a hundred other fascinating events, occupy one's attention while with these primitive dwellers upon the high mesas of the Painted Desert.

Perhaps, if one of the shamans or women of the Old were in the mood, or were "persuaded," one might have the opportunity of listening to the story, elsewhere told in these pages, of the storming of Awatobi and the slaughter of the whole of the male populace — victims to the wrath of the vindictive Hopi medicine-man because of their tolerance of the long-gowns, as the Hopis used to designate the Franciscan friars.

Talk about human interest in the ruins of Europe attracting American travelers there! Surely there is enough of human interest in the ancient historical ruins of Arizona to give one his fill, for a while at least.

Leaving this interesting people the road would cross another portion of the Painted Desert, over the Little Colorado River, where more prehistoric ruins are to be seen, as well as the Falls, near which the Little Colorado enters into a series of deep canyons that are precursors of the more wonderful Grand Canyon with which they connect. Then one crosses the shoulders of the San Francisco Mountain, by Sunset Crater to the Cave and

Cliff-dwellings of Walnut Canyon and by the Lava Fields to Flagstaff, where is situated the Lowell Astronomical Observatory. Here Professor Percival Lowell, of Boston, with his corps of trained astronomers, made those studies of the planet Mars that have excited tremendous interest and attention among the astronomers of the world. From Flagstaff a good road leads to the scenic wonder of the whole earth — the Grand Canyon of Arizona. El Tovar, the Hopi House, the Navaho Village, the Rim Rides to Grand View, Moran, Maricopa, Hopi, Pima, and other points; the descent into the canyon by the Bright Angel, Hermit or other trails; the new monument recently erected and dedicated to the memory of that great explorer and scientist, Major John Wesley Powell, the organizer of the United States Geological Survey, and the Bureau of American Ethnology, as well as the Father of the U. S. Reclamation Service; a visit to Mallery Grotto where many quaint pictographs are to be seen; these, and a hundred other things will make this portion of the trip forever memorable.

Then, taking the Bass Road along the rim of the Canyon, passing Hotouta Amphitheater, Castor and Pollux, Havasupai Point — which latter Dr. T. Mitchell Prudden asserts is the most scenic and attractive point on the whole south rim of the Grand Canyon — one may ride to Bass Camp, go down the trail into the heart of the Canyon, where, from three interior plateaus — the Grand Scenic Divide, Huethawali Plateau and Mystic Springs Plateau — one may see the Canyon under the most favorable conditions. Thence an easy ride over a fairly-well engineered trail conducts one to the Colorado River, where Bass Ferry is found — a cage swinging on a strong wire cable — over which horses, cattle, sheep, and pas-

sengers are transported. On the other side of the river the trail leads by Dutton Point to Point Sublime, the spot where Captain Dutton, the poet-scientist of the United States Engineers, wrote his captivating description of the Grand Canyon, which have been the delight of scientists and literati ever since they were first published. After seeing Point Sublime you can wander over the volcanic regions of southern Utah to Kanab Canyon and the Canyon of the Rio Virgen.

Then, on returning to Bass Camp, on the south rim, another experience, by many regarded as even more fascinating, thrilling and unique, is offered by a trip down the Topocobya Trail to the villages of the Havasupai Indians, in Havasu — Cataract — Canyon.

Thus filled to overflowing with the grandeurs and romances of the Grand Canyon region the traveler will turn his face to Williams, resting quietly at the foot of Bill Williams Mountain, and in the heart of a great lumbering region. Then, riding over the roads constructed over the breaks of the Mogollon Plateau, one has thrills enough until he reaches Jerome, the famous copper-mining camp, which made the fortune of Senator Clark, of Montana. From here a brief detour would allow a visit to the remarkable Montezuma's Well, and the romantic cliff-ruin, known as Montezuma's Castle, from which the road would be to Prescott, once the most important town of Arizona, and the center of a district of surpassing historic associations, and over the Copper Basin Mountains to Castle Hot Springs and thence to Phœnix.

The entire trip would cover from a thousand to thirteen hundred miles. It would cross five transcontinental automobile roads, viz., "Ocean to Ocean," "National Old Trails," "Borderland," "Trail to the Sunset" and the "Old Spanish Highway." Six railroads would be

accessible, also, viz., the Arizona Eastern, Southern Pacific, Santa Fe, Grand Canyon branch, Prescott & Phœnix branch, and the United Verde & Pacific. Taking it all in all, I know of no such trip on the surface of the globe, and if, after this "Wonder Circuit" was well established, it were enlarged to take in the Zuni Indian villages — the famed "Seven Cities of Cibola" of Coronado's day — El Morro, as the historic Inscription Rock is known; Acoma, the peerless City of the Cliff; the Mesa Encantada, or Enchanted Mesa of the Acomas; the Pueblos of the Rio Grande, including Taos on the north; the Penitentes of Taos and its surrounding country; the Mesa Verde Cliff Ruins, Monument Valley, with its scores of Standing Rocks that dwarf into insignificance the world-famous Garden of the Gods in Colorado; the Mammoth Natural Bridges of southern Utah, each one of which is vastly larger than the Natural Bridge of Virginia — I say, were these added scenic features included, it would then be such a veritable revelation of marvels that those who had deemed themselves, up to that time, well-informed Americans, would feel that they were in a new, utterly foreign, and altogether strange and marvelous land.

CHAPTER XIII

THE BIRDS OF ARIZONA

From the foregoing chapters the most indifferent reader must have gathered that the topography and climate of Arizona are wonderfully varied. The altitudes change from those of the desert, in some places very near to the sea level, to the snow-capped mountain summits where Sierran trees abound. Naturally in such varied conditions one may anticipate a wide range of bird life. Merely to give a list of all birds found in Arizona would be of no benefit to the general reader, and useless to the scientist, whose knowledge far surpasses mine. But it will prove interesting to all if I tell of Arizona bird life in its peculiarities, for in no other State in the Union, perhaps, save New Mexico and California, are the conditions for bird life so distinctively individualistic, and so thrillingly fascinating.

To go out any time of the year, winter as well as summer, and find the desert mesas literally abounding with black-throated song-sparrows, never ceasing their sweet and attractive song; to find the mountain blue-bird (bird of happiness), blue all over, rich and attractive beyond measure, by the hundreds around one's own home, in the trees by one's own house; to see the Bullock's oriole and the Arizona hooded oriole build nest after nest of horse-hair, persisting in making a home for himself and his family five times in succession, after the rude winds had blown them away; and to enjoy humming birds and warblers, threshers and cardinals, as I have described them

later in this chapter — these are but a few of the common delights of the most cursorily observant bird-lover in Arizona, especially in the southern portion of the State.

Harry S. Swarth, in his *Distributional List of the Birds of Arizona,* gives a total of three hundred and sixty-two species and sub-species found within the State. Of these one hundred and fifty-two are residents, seventy-two summer visitants, fifty-seven winter visitants, thirty transient, and fifty-one of casual occurrence.

To comprehend aright the annual movement of the birds, as well as their regular habitats, one must recall the various zones of diverse topography and climate found in Arizona.

The *Lower Sonoran* Zone is the most extensive. It includes the so-called desert areas. Almost the entire portions of western and southern Arizona are included within its area, and long narrow ribbons of it extend far up the Gila River and its tributaries, and also embrace the whole of the desert of the Little Colorado River, which reaches the boundary line of New Mexico. The *Upper Sonoran* Zone is much more limited, though it embraces the northeast and northwest corners, together with a large area in the central part of the State, with patches dotted here and there in the southeastern portion. These patches are mainly no greater than the belt of live-oak covered foothills occurring between the higher mountains and the valleys below, and only seventeen birds are listed as belonging to this zone. On the other hand, the *Transition* Zone, while much more limited in area, contains a far larger variety of bird life, sixty species already being well-known. This zone includes the plateaus and mountains, yet a marked difference is found in the birds of the southern portion of the State and those of the northern. The former, twenty in

number, summer resident and visitant, are related to the Mexican fauna farther south, while the latter, forty in number, summer visitant and resident, are more closely related to the bird life of the Rocky Mountains or the Sierra Nevada of California.

It is interesting to note that fourteen of the summer visitants into southern Arizona are of tropical derivation, and come here merely during the heat of the summer, retiring again southward when the winter period arrives. The result is that few birds are to be found in the mountains of southern Arizona during the winter months, and that the major portion of these are temporary visitants from the north. Hence central Arizona may be regarded as the practical dividing line between the birds of the North and those of the South, and that here may be found a strange commingling of the two diverse fauna.

Above the great Mogollon Divide, on the Colorado Plateau, one might imagine himself in the central Rocky Mountains as far as the birds are concerned. Here are the dusky grouse (*Dendrgapus obscurus*), commonly known as the pine-hen, scooting out of the tree tops in whizzing flight and startling the unaware with the suddenness of their appearance. This bird feeds largely upon the pine-nuts of the pinyon trees, and its flesh is the most delicious of any of the wild birds I have ever eaten. The Alpine three-toed woodpecker (*Picoides Americanus Oorsalis*), with his white-spotted body and wings and dainty golden crown, climbs up the pines and spruces of the San Francisco Mountain, while the white-crowned sparrow (*Zonotrichia cucophrys cucophrys*), has been found in the same region in June, apparently breeding. Grebe, mallard, blue-winged teal, shoveller, coot, pintail and ruddy duck have all been found in the region

of the Little Colorado River, and the white-faced glossy ibis, American bittern, black-crowned night heron, great blue heron, little brown crane, sand-hill crane, sora, black-necked stilt, wood ibis, American avocet and a variety of sandpipers are by no means uncommon.

There is little doubt but that the great blue heron and the wood ibis breed here, and a few observers have seen the Anthony heron here, as well as the snowy heron. Now and again one may also see the little brown crane, a smaller brother to the sand-hill crane, which it much resembles.

The real bird lover can imagine the delight one feels in finding such birds as the ibis, and stilt, and the rare and dainty Anthony heron, all of which have been seen in the region of the San Pedro River.

The sand-hill crane is a bird with which the Navaho Indians are very familiar. Its peculiar call has a sacred meaning to them. They imitate it as closely as they can in their elaborate and wonderfully thrilling ceremonies of the Fire Dance.

When I first visited Flagstaff, nearly thirty years ago, the Mexican turkey was abundant in San Francisco Mountain. Turkey Tanks receive their name from the numbers of turkeys that used to be found there. On several occasions I have gone with hunters and we never failed to find turkeys. I do not know how true it is, but it is said that the turkey is not found north of the Grand Canyon. This may be so, as the Kaibab Plateau has a much higher elevation than either the Colorado or Mogollon Plateaus. But in the White Mountains they abound, and one, taking a walk from the road, through the open forest, at almost any time, is very likely to run upon a single bird or a flock. Gambel's partridge was also abundant in Cataract (Havasu) Canyon, and the Havasupais used to snare them in large numbers.

Mourning doves used to be found in droves, but they occur far less frequently now, and the road-runner is occasionally seen. In the southern part of the State, near Phœnix and Tucson, while automobiling and driving, I saw several in 1915, where they are quite common,

Of the hawks, the sharp-shinned and Cooper's are not uncommon about the San Francisco Mountain and the Grand Canyon and the flammulated screech owl has been seen in the Canyon. The western red-tail is found almost all over the State, and when first observed by Merriam in 1889, they were abundant in the San Francisco Mountain region, after August 6 and throughout September. He says he never saw them so unwary. "They were easily approached, either on horseback or a-foot, and many were shot in the pines. They fed principally on chipmunks (*Tamias cinereicollis and Tamias lateralis*), and occasionally captured the large Abert's squirrel (*Sciurus aberti*)."

I have several times seen the golden eagle (*Aquila chrysaëtos*), both in the winter and summer, north and south, though never in the western portion of the State. On the San Francisco Mountain and the Grand Canyon it is not uncommon and it ranges eastward and south to the Mexican line. The prairie falcon (*Falco mexicanus*) is also fairly common.

The American goshawk, Harris hawk, zone-tailed, Swainson, Sennett white-tailed, Mexican black, Mexican goshawk, American rough-legged, and other raptores are found rarely or more or less abundantly. Various owls also are found, some in quite large numbers, others very rarely. Three of the hawks only, viz., the sharp-shinned, Cooper's, and the western goshawk are destructive to the farmer's poultry. All the others are useful through their destructiveness to insect and rodent pests.

The sharp-shinned and Cooper's hawks are veritable pirates, and the small amount of good they do by the destruction of rodents is more than offset by their ravages of the poultry-yard and their never ceasing war upon more useful birds. The sharp-shinned may be distinguished by his small size, having a body length of about ten inches; narrow, even-tail; perfect, darting flight; white breast spotted with reddish brown, and slaty blue or bluish-gray back. Cooper's hawk is slightly larger; the tail rounded and characterized by black bands and a narrow white tip, and the black top of his head contrasting with the slaty blue of the back. His habits are much the same as those of the sharp-shin, and he is equally destructive. The western goshawk is the larger of the common hawks and the most destructive. But he must not be confused with the black Mexican, slightly smaller in size, and who has frequently suffered for the misdeeds of his larger cousin. No hawk should be shot which displays red feathers on shoulders or tail, although both the red-shouldered hawk and the red-tail are frequently called hen-hawks, and are killed because of their supposed depredations. Neither of these, however, has been guilty of the least damage, save in the most exceptional instances, and the work they do in the fields in clearing them of gophers, squirrels, mice, etc., of which their food chiefly consists, is invaluable to the farmer.

The same may be said of the smaller hawks, and one of the most foolish things a farmer can do is to shoot them and the smaller owls. The monkey-faced owl, the one most common in the irrigated Arizona valleys, unless the little prairie owl is excepted, is one of the best feathered friends that the rancher has, and should be protected.

Humming-birds of some species abound in the northern

Photograph by George Wharton James.

AN APACHE MAIDEN WATER-CARRIER AT PALOMAS, ARIZONA.

portion of the State. Merriam says of the broad-tailed humming-bird (*Selasphorus platycercus,* Swainson):

"It is very abundant in the balsam belt and the upper part of the pine belt. A nest containing two nearly fledged young was found on the limb of a Douglas fir, about four feet from the ground, July 31. The principal food plant of this humming-bird is the beautiful scarlet trumpet flower of the *Pentstemon barbatus Torreyi.* During the latter part of August and early September, after it has ceased flowering, these birds were most often seen in the beds of the large blue larkspur (*Delphinium Scopulorum*). They wake up very early in the morning and go to water at daylight no matter how cold the weather is. During the month of August, and particularly the first half of the month, when the mornings were often frosty, hundreds of them came to the spring to drink and bathe at break of day. They were like a swarm of bees, buzzing about one's head and darting to and fro in every direction. The air was full of them. They would drop down to the water, dip their feet and bellies, and rise and shoot away as if propelled by an unseen power. They would often dart at the face of an intruder as if bent on piercing the eye with their needle-like bill, and then poise for a moment almost within reach before turning, when they were again lost in the busy throng. Whether this act was prompted by curiosity or resentment I was not able to ascertain. Several were seen at the summit of the mountain during the latter part of August. They were found also at the Grand Canyon of the Colorado, September 12–15. They began to leave the mountain [San Francisco Mountain] during the first week in September, and none were seen after the middle of the month."

He who has seen such swarms of these dainty little creatures, with their iridescent coats of delicate greens, and throats of vivid scarlets, has had one of the most delightful of experiences.

Another of the commoner species is the equally exquisite and beautiful rufous (*Selasphorus rufus*). The delicate browns of the body set off the reddish golden glory of the throat and make this one of the joyous sights of the mountains.

There are several other species, but none as common

as these, and they are generally found only in the southern zones.

Of the humming-birds there are fourteen species found in Arizona, as contrasted with eighteen in the whole of the United States and Lower California. Hence it would be peculiarly appropriate to denominate Arizona "the land of the humming-bird."

Other common birds are the long-crested jay, Woodhouse's jay, the raven, crow, and pinyon jay. The latter are noisy creatures, generally seen in flocks. I have met many of them in the Grand Canyon. On the other hand, the Arizona jay (*Aphelocoma sieberi arizona*), while found in numbers in the mountains of southeastern Arizona is seldom, if ever, found as far north as Camp Apache.

Another most interesting Arizona bird is the road-runner. To see one jump towards the road as if to certain death in front of a swiftly oncoming automobile and then stop with suddenness, *using its long tail as a brake,* is a startling surprise to him who sees it for the first time. I used to regard as probably mythical the stories told of this bird's habit of surrounding the sleeping rattlesnake with pieces of cholla and other thorny cactus so covered with thorns that when he awoke he was unable to escape, when the fearless bird would deliberately pick him to death. But a short time ago, my friend Dr. Mills, of San Bernardino, Cal., assured me that he has the testimony of reliable witnesses, who are ready to vouch for the accuracy of the stories. There need be no question, however, as to the voracious appetite of the road-runner. He will eat his own weight in insects, centipedes, scorpions, small snakes, lizards and occasionally mice and the smaller rodents, each twenty-four hours. *The current fiction that he is a robber of other*

birds' nests and an eater of hen's eggs has absolutely no foundation in fact, hence he should be carefully guarded as a friend to the rancher.

The above paragraph in italics I had written as the result of my own observations and the questions put to scores of bird-lovers, ranchers, and others. Just as this chapter is about to go to press I am creditably informed by one of the most studious observers of Arizona's birds, Mrs. J. W. Wheeler, of Tucson, that sometime ago she succeeded in breeding and raising ten birds of a cross between a buff Cochin bantam and a Chinese ring-necked pheasant. Such a cross being a great curiosity, as well as a rarity, Mrs. Wheeler took great care of them, watching them daily. When they were about the size of a quail one by one, each day, they began to disappear. Aroused to desperation a rigid watch was set, and a road-runner was found to be the murdering thief.

Furthermore, Mrs. Wheeler has seen him eat birds' eggs. The first time she saw one he was eating a cactus-wren's eggs. He is a voracious meat-eater, and Mrs. Wheeler is assured that when he cannot get his usual prey he undoubtedly lives on birds and their eggs. His voracity is sometimes greater than his capacity, for a year or so ago, Mr. Wheeler found a dead road-runner on a sandy wash of the Santa Ritas. Picking up the carcass, he found one leg and the tail of a rat sticking out of the mouth of the dead bird. With somewhat of difficulty he succeeded in pulling the remnant of the rat out of the bird's throat and then found to his astonishment the head and the upper part of the rat's body partially digested. The story was easy to read. The bird had attempted to swallow too large a rat, had got it partially down and into his stomach as far as it would go, when he then choked to death, for, one leg of the rat had

wedged in the bird's throat, so that he could not eject the creature he was unable to swallow.

My informant also assures me that the road-runner will also eat large snakes. She once saw one catch a gopher-snake of very large size. Taking it by the bill near the end of the tail it slung him first to one side and then to the other in a remarkably vigorous and competent fashion. She also remarks that it builds a poor nest, lays about seven eggs, some of which fall through the bungling nest and are broken. As it begins to incubate as soon as the first egg is laid, the young birds come out of the eggs at separate times, and therefore it is seldom a road-runner raises much of a family.

There are four species of quail found in Arizona, all of which are of peculiar interest. The masked bob-white, which formerly occurred in the southern Santa Cruz Valley, is now apparently extinct in the State. Naturalists have been much interested in this beautiful bird, as it is the western-most of the bob-whites. It was always regarded as a Mexican habitant, as it was never found far north of the border. For many years in the early history of the State it was regarded as the same bob-white of the Eastern States, and was abundant, but it has not been seen for several years. One writer says of them: "The bright, deep chestnut breast plumage of the males looked red in the sun, and gave the birds a most magnificent appearance." Their habits were very similar to the common quail, and they uttered the characteristic "bob-white" call, with bold, full notes, perching on the rocks and bushes when calling. They also had a secondary call of *hoo-we,* articulated as clear and clean cut as their bob-white. This they used when scattered, especially near nightfall.

The next of the species is the so-called fool quail

(*Cyrtonyx montezumae mearnsi*), because of its habit of lying very closely until nearly stepped upon, when it takes flight. Its call consists of a series of notes slowly descending the scale, and ending in a long, low trill, the whole being ventriloquial in effect and most difficult to locate. It is easily imitated, however, and the birds readily answer when one whistles. It is very fond of the rough, brushy hillsides. The male is of a warm brown color, with spotted black and white breast and chin, with white patches over the eyes. Fuertes, speaking of his crest, says: "The most noticeable thing about him as I watched him running was the curious use of his queer little crest. Instead of elevating it as the mountain quail does his, he raised his painted head on slim neck and spread his flowing crest *laterally*, till it looked like half a mushroom, giving him the most curious appearance imaginable."

The third Arizona quail is the scaled quail (*Collipepla squamata s.*), which is the common species of the southeastern part of the State. In appearance it is very different from the Mearns. Soft-toned in color, with delicate brownish-gray on back, its breast feathers of a scale-like formation in delicate grays and browns, it is as quiet and unobtrusive a bird as the fool quail is attractive and striking in color.

The fourth species, which is a steady resident, is the desert quail (*Lophortyx gambeli*). It is readily distinguished from the former described species, its black topknot coming out from a brown crest, the chin and throat being jet black with a white band.

The scale quail has a restricted range of altitude, seldom being found outside of the zone from three to four thousand feet above sea level. On the other hand, the Gambel quail ranges from high to low, being found

as high as six thousand feet, and down about to sea-level at Yuma, and while some authorities claim it is almost confined to the southern portions of the State I find it has a much wider range. The Mearns quail is a tough and vigorous bird and has a wide range also.

One observer recently has discovered a new species, which clearly partakes of the distinctive characteristic of both the Gambel and scale varieties. As it was found at an altitude of three thousand five hundred feet, where these two varieties meet she thinks it very possible that this is a cross between the two.

It will be interesting for bird-lovers to note that the Arizona Forestry Service has recently released three dozen Hunter bob-whites from the East, some in the region around Tucson, and some in the Salt River Valley. There, too, Mrs. Wheeler has been instrumental in having brought down a number of plumed quail from Oregon which also have been released. This is the largest quail in North America.

One of the many juncos found in the State makes the southern regions its permanent home. This is the Arizona variety (*Junco phaeonotus palliotus*). The red-backed junco is found from the San Francisco Mountains across to the eastern boundary, but not south of the White Mountains. One of the rarer birds is the olive warbler (*Peucedramus olivaceus*), and it is not uncommon also to find the Mexican chickadee (*Penthestes sclateri*), though it is found only in the Chiricahua Mountains.

Of peculiar interest is the tropical element distinguishing the bird life of the mountains of extreme southern Arizona, some of which, as the coppery-tailed trogon, the olive warbler and some of the humming-birds, have already been referred to. Others are the thick-billed parrot

(*Rhynchopsitta pachyrhyncha*), which comes irregularly, though at times abundantly, into the Chiricahua Mountains; the red-faced warbler (*Cardellina rubrifrous*), a beautiful gray-bodied creature, with a vividly red face, with black head markings; the equally trim and interesting painted redstart (*Setophaga picta*), found in several mountain ranges; and the sulphur-bellied flycatcher (*Myiodynastes luteiventris*), which is a fairly common summer visitant in the higher mountain ranges.

There is another assemblage of birds whose association with the giant cactus makes them of special interest. The arid mesas, covered with the sahuaro, present anything but a favorable aspect to the bird student. Nevertheless, many species occupy these regions, some of them not occurring elsewhere. The gilded flicker (*Eolaptes chrysoides mearnsi*), is closely restricted to this plant, being found abundantly where the sahuaro is most plentiful, and disappearing east of the Santa Ritas where the giant cactus is unknown.

The Gila woodpecker (*Centurus uropygialis*) also seems to have a peculiar fondness for the same plant, though it is found elsewhere. These two birds dig innumerable holes in the cactus, which, when they leave, are utilized by other species. The elf owl (*Micropallas whitneyi*), a quaint, dun, brown spotted little creature, invariably flees to the giant cactus when breeding, and other species which utilize the holes bored by the gilded flicker and Gila woodpecker are the Arizona crested flycatcher (seldom seen elsewhere than among the sahuaros), the sparrow-hawk, sahuaro screech-owl, and purple martin. The western red-tailed hawk and the western horned-owl frequently nest in the forking arms of the cactus. Then one must not forget the cactus woodpecker, with his red head and peculiar black and white

ladder-striped back. He is to be seen on the mesas, both where the cactus abounds and elsewhere. He doubtless nests in the chollas.

A few peculiarities of other Arizona birds may be noted. The rivoli humming-bird, for instance (*Eugenes fulgens*), is the largest known species in North America, being only about five and one-half inches long. On the other hand, the elf owl (already referred to) is the smallest of the owls, and is no longer than the humming-bird, though, of course, of greater bulk. The Inca dove, too (*Scardafella inca*), no larger than an English sparrow, though with longer tail, quiet in color as the mourning dove, nests commonly in gardens and parks in the more southern cities, as Tucson and Phœnix. On the Arizona jay one could well write a whole chapter, as he could also on the life history of the white-necked raven (*Corvus cryptolenus*). The Arizona cardinal, pyrrhuloxia, phainopepla, and vermilion fly catcher are common and conspicuous species of notable coloration and appearance. The cardinal, too, is fully a half inch larger than the other largest variety in the United States.

In the plains and valleys of Arizona typical desert species are found. The threshers abound in the central part of the State, both in species and individuals, while in the lowlands of the south are to be found the Palmer, Bendire, Leconte, Crissal, and, in the winter, the sage thresher.

The Palmer thresher sings constantly throughout the day in winter, but summer time is when he makes a real business of singing. He then sings nights as well as days, for if at any time during the night he should be awakened, his little soul bursts forth into sweetest song.

The reason one of my friends gives for her strong

dislike of the shrike is that she once found one killing a Palmer thresher, a bird much larger than itself.

Of the value of Arizona as a place for the study of bird migration too much cannot be said. Indeed, as yet, no author has begun to do the subject the justice it deserves. For instance, Arizona is the winter home of the Audubon warbler. It breeds in the upper Sonoran zone, and sometimes dots the cottonwood trees by its great abundance. Its song is more steady and frequent here than anywhere else that it has been observed, and it seems to enjoy the charm of its own song.

One of the most beautiful sights ever observed was seen recently near Tucson, which is proven to be the winter home of the brilliant yellow-headed blackbird (*Xanthoclphalus x*). Over a thousand of them were in one flock, and they lit upon a tree denuded of leaves. Immediately, the tree seemed to spring into a new, peculiar, and vivid life. The white, yellow, black and various shades of the bodies and wings, moving and iridescent in the sunlight, made a picture well worth traveling many miles to see.

Then, too, two fine species of the purple gallinule, whose normal habitat is British Guiana, were recently found; also a cara-cara, that strange and peculiar mixture of vulture and hawk found, as a rule, only in Central America. It is not at all impossible to suppose that they may both breed here, just as the robins, cactus-wren, towhees, and Lewis woodpeckers from the North. They are found here literally by the hundreds, especially in the blind or headless canyons of the foothills around Tucson.

The Sonoran yellow warbler is also found here at times. It is one of the daintiest of tiny creatures and of the most delicate and beautiful shade of yellow. It frequents the water courses, and is fairly abundant.

Another of the richest of treats is to sit, or stand, and listen to that sweetest, gentlest, and most exquisitely voiced of all the warblers, the verdin, which spends winter and summer here alike. With its yellow head and chestnut patch on its wings it is as pretty as its song is entrancing. That visitor to southern Arizona who fails to enjoy the song of this most perfect of quiet singers, is as indifferent to rare bird music as one who goes to England without hearing a skylark.

The lark bunting also comes in the early fall. His habits are pretty well fixed. At the time of his arrival his plumage is gray and quiet, then it rapidly changes to a perfect black and almost white. The peculiar habit of these birds is to fly in large flocks, singing as they fly, and one who has ever heard this moving feathered orchestra, making the vibrating atmosphere melodious and harmonious with its unique songs, will never forget its rare enchantment. They leave here from the first to the third of May — seldom can one be seen after the fifth — and return about the fifth of August, with their young. They go to the Platte and Mississippi Valleys to breed.

A complete chapter could be written upon the birds found on the Lower Colorado River, which, as is well known, forms the boundary between Arizona and California, but this would be of interest only to the technical ornithologist. To these reference is made to Joseph Grinnell's *Account of the Mammals and Birds of the Lower Colorado Valley,* published by the University of California.[1]

Few people know the difficulties and hardships under

[1] To Harry S. Swarth, both by his letters and his *Distributional List of the Birds of Arizona,* and to Dr. Joseph Grinnell, Professor of Biology of the University of California, and his assistant Miss Wythe, I am under considerable obligation for material assistance while writing this chapter.

A TREE AND CANAL LINED STREET AT CHANDLER, ARIZONA.

which the ornithologists labor who study the birds of the giant cactus region. The following picture is from one of Mr. Swarth's bird articles, and is illuminating in more ways than one.

"Just north of our camp was a steep circular hill, apparently of volcanic origin, covered with loose black boulders, and rising abruptly from the sea; other similar ones were also scattered irregularly through the valley. The only growth on the hill was a giant cactus (*Cereus giganteus*), with which huge plants the southern slope was thickly covered, there being none upon the opposite side. Out on this hill, exposed to the full glare of the Arizona sun, in June, we found it impossible to work except in the early morning and late in the afternoon, being driven to shelter in the middle of the day. It is no joke to carry a twenty-foot ladder about on level ground, from one cactus to another, but on the steep hill side, stumbling over loose boulders, dodging cactus, and with the perspiration running in one's eyes, a person feels that he earns pretty nearly all that he succeeds in getting. The cactuses on this barren, unattractive looking hill were particularly rich in bird life."[1]

[1] *The Condor*, January, 1905, p. 23.

CHAPTER XIV

THE FLORA OF ARIZONA

In her floral displays Arizona is as wonderful, as marvellous, as varied, as captivating, as astonishing as in her scenery, her geology, and her Indians. To most readers it may sound absurd to state that she has almost as large and indigenous a flora as has California, and that the gamut she plays upon is nearly as wide and varied, yet it is true. It is equally as true, though apparently absurd, that — if Gifford Pinchot's word may be taken — Arizona contains the largest pure yellow pine forest *in the known world* — Arizona, the arid, the bleak, the desert, the barren, the *land that God forgot!* There are only two other States in the Union that have as large and varied a grass flora; and in her grama grasses (*Bouteloua sps*) she leads all the others. She stands in the front rank in the number of her indigenous trees; in the wealth of her indigenous peas, having over three hundred species, clovers or legumes, and in her large fern flora; and as for cactuses, she leads the United States in their diversity and number. New Mexico has about sixty different varieties, California about forty, while Arizona possesses over one hundred.

Perhaps these remarkable statements are made possible because of other remarkable conditions, viz., that Arizona ranks next to California in extremes of altitude, in extremes of summer and winter temperature, and in extremes of rainfall. The visitor cannot climb

quite as high, or descend quite as low as in the Golden State, but he can pretty nearly. The thermometer does not swing with quite as wide a sweep, and the rain curve reaches a little less angle than in California. But in these things she leads all the rest of the States, and therein is found the secret of the marvellous flora she possesses.

Arizona has altitudes varying from slightly above sea-level to eleven thousand feet. This means practically that her climate ranges from tropical on the one hand to the freezing zone on the other. A temperature of one hundred and twenty degrees Fahr. in summer is not uncommon in some regions, and thirty degrees Fahr. below zero has also been registered in high mountains. On the summits of some of the peaks frost has been found every night in the year.

The rainfall also varies from two to three inches on some portions of the southern deserts to as high as thirty-five inches on the tree-covered plateaus of the north.

Of the yuccas, agaves, cactuses, chollas (pronounced locally *choy-ya*), and other peculiarly desert and western plants one might write a volume. Bourke thus speaks of what he saw riding from Old Camp Grant to Tucson:

"All the way, on both sides of the road, and as far as eye could reach, we had in sight the stately mescal, loaded with lovely velvety flowers; the white-plumed Spanish bayonet, the richly green palo-verde without leaf; the chollas, the nopal, the mesquite, whose 'beans' were rapidly ripening in the sultry sun, and the majestic 'pitahaya' or candelabrum cactus, whose ruby fruit had long since been raided upon and carried off by flocks of light-winged hummingbirds than which no fairer or more alert can be seen this side of Brazil. The 'pitahaya' attains a great height in the vicinity of Grant, Tucson, and MacDowell, and one which we measured by its shadow was not far from fifty-five to sixty feet above the ground."

This "pitahaya" of Bourke's is the giant cactus (*Cereus giganteus*) also known as the sahuaro (sometimes spelled saguaro) and it is the "tree" of the desert. Thousands of them are to be found in various parts of the State, as, for instance, around Tucson, and west of Kingman on the line of the Santa Fe. They are almost peculiar to this region, in the United States, though common enough in some parts of Mexico. For many years it was supposed they did not grow in California, but over twenty years ago I found quantities of them in secluded and little known areas on the western side of the Colorado River. They are really trees in size, growing to the height of twenty, forty, and more feet, and sending out huge branches, which, however, have none of the slender grace that most tree-branches show. On the other hand these saguaro branches are almost thick as the main trunks, and they are stumpy and thick at the ends, as if they were arms growing out of the bodies but the hands and fingers had not yet appeared.

The shafted flickers and woodpeckers tap their fluted exteriors, and build moist, cool nests for themselves inside, and elf owls, those tiny specimens of the owl family, also nest in them. During the rainy season these veritable reservoirs of water slowly fill themselves, the "flutings" of the trunk expanding or opening like the plaits of an accordeon. When the water disappears there is corresponding shrinkage. They generally flower in May and June, blooming most abundantly on the sunny side of the tree. The flowers are handsome, whitish and waxen, and very perfect in form.

It might be noted that the sahuaro is a type of desert tree life. In general, no matter how large the tree the leaf is exceedingly small. Some kinds have scarcely any. Undoubtedly the ancestors of these trees had

leaves, but in the arid condition of the desert the leafy varieties disappeared and those that were able to protect themselves with spines remained. Thus the thorny varieties have propagated and improved themselves by unconscious selection.

It has long been known that if certain varieties of wild desert cactuses were not protected by their bristling armour of spines — thorns so sharp and stiff that they penetrate thick leather — they would soon disappear. Prowling animals like the coyote, rabbit, rat, as well as the burro, horse, mule and roaming cattle would speedily eat up every shred. Sometimes, even with their natural protection, they were eaten, and large areas of them almost entirely swept away. This was deemed the action of animals rendered desperate for want of food and water, and allied to such acts as the eating, by the Donner Party, of the rawhide coverings of their wretched shacks in the fierce throes of approaching starvation.

But it is now known that if the thorns were not there these desert plants would be eaten with eager delight. The cattle enjoy them when the thorns are removed. This was proven conclusively during a season of severe drought, when forage grasses were exceedingly scarce, and the thorns were burned off by means of a plumber's torch. Yet the botanist regards the thorns as perverted or changed stems, branches and leaves. The strong light of the desert reduces the size of the leaves.

At the foot of the low mountains, and on the level places, are to be found many *chollas,* generally known as cactus, though the scientist classifies them as *opuntias.* The term cactus in the West is a very general one. Any flora with spines seen in the desert, and even the yuccas and agaves, are commonly spoken of as cactus by the uninformed. Arizonans, however, have learned to

differentiate to some degree, and they speak of saguaros, chollas, yuccas and cactus, but in a very loose and inaccurate manner. For instance, there is a large barrel-shaped, thorny specimen, common all over desert Arizona. It is called *bisnaga* by the Mexicans and some Americans, and the *fish-hook cactus, barrel cactus, niggerhead,* and *candy cactus,* respectively, by others. Most people speak of the *cat's claw* (*Acacia greggii*) as a cactus, and few realize that the common chollas and what they call *prickly pears,* with their large, flat, heavy joints are technically opuntias. The *pin-cushion cactus,* to the scientist, is *Mamillaria grahami* and the *rainbow cactus, Echinocerus rigidissimus.*

The barrel cactus has some of the characteristic appearance of the sahuaro, but in reality is very different. This is the cactus that has saved the life of many an early day desert traveler. Cut through its outer protection its melon-like interior (though much firmer than a melon) may be pulped up into a drinkable consistency, and thus give one the saving draught that defies death on the desert. It is also cut up into cubes or sliced and made into delicious candy. Then, too, it is called fish-hook cactus on account of the shape of its thorns. Entirely different are the thorns of the *giganteus.*

The chollas are many and various. Those who are attracted to cactus generally favor these on account of their halo of ivory colored, opalescent needles, which glisten in the sun like a veritable spirit halo of ineffable and rare beauty. The cactus wren, too, loves the cholla, for many a nest is to be found among the spines, and the tiny bird sits and sings its cheery song to the passer-by — no! he sings to his mate, or for his own joy, and the passer-by may enjoy the concert if he will. There are the many spined or ball cholla (*Opuntia bige-*

lowii) growing at the foot of the low mountains, and the common cholla (*Opuntia spinosior*) with showy flowers of many colors, ranging from deep magenta to light red, pink, yellow, and even white; its fruits green or light yellow, tinged with red, making it one of the most attractive of all these prickly species. Then there are the jumping cholla (*Opuntia fulgida*), so called because the old prospectors, cowboys, soldiers and others, who used to have to sleep out on the desert, as well as wander or travel over it during the day, always affirmed that if you merely looked at it this cholla " jumped at you and stuck you like a cursed Apache." Its flowers are a light rose with little variation, but it has dense chain-like masses of fruit. It is one of the most abundant and characteristic of the chollas.

There are many other varieties, all of which repay study, but which appear very much alike to the ordinary observer, though the flowers are very different one from another, some being greenish-yellow to reddish-brown, golden-brown, light purple, deep magenta, light red, lemon-yellow, light yellow, yellow with tinges of red at the base of the petals, yellow with orange at base. An unnamed species of the prickly pear has a golden-yellow flower in the morning, which changes to orange and finally deep orange in the afternoon.

The most spiny of the chollas is the *Bigelowii*. It grows to a height of from three to six feet, and is tree-like in form, rather erect, and compactly branched. The entire plant is covered with an impenetrable coat of white, glistening spines and is most attractive to the eye of the person who can forget the piercing quality of the thorns.

The young blossoms of one cholla (*O. arbuscula*) when plunged into hot water for a few moments and then dried,

makes an excellent salad, with a flavor that many people find most agreeable.

Prickly pears are often called *nopals* in Arizona. They have flattened pear-like lobes or joints, and their flowers are usually larger than those of the chollas and yellowish or golden to deep orange in color. The fruits are quite soft and juicy when ripe, and are a conspicuous feature, being deep red or magenta in color. They mature during July to September or October, inclusive, and unless utilized in some way soon become overripe and spoil. The rabbits, gophers, field-rats, birds, bees, and certain fruit-eating beetles and cattle feed on them at this time and seem to enjoy them amazingly. The Indians, too, have always regarded them as a great delicacy. They are wonderfully expert in impaling them on a wooden skewer, cutting off the spicules or thorns and eating them. They also make a jam or preserve of them which, where one does not understand the method of manufacture, may be eaten with a certain degree of relish. But when I saw how it was made my gorge arose, and ever arises, as I think of the process. The old squaw, after removing the thorns, placed the whole fruit in her mouth, chewing it up, and a continuous stream of the small seeds of the fruit came out of the southeast corner of her mouth, while the "meat" came out at the southwest corner. The seeds were discarded, and the fruit duly cooked. Indian jam has had no attractions for me for many years!

One of the cactuses (*Echinocerus Engelmanni*) has a fruit that the Indians are very fond of. As soon as it ripens the thorns drop off. Then the Indians pick it, cook it, and eat it with great relish. I have eaten it only twice, but each time with a desire that I might have it often as a pleasing addition to one's dietary.

Flowers of the Prickly Pear, one of the Desert Cacti of Arizona.

From a Water Color Painting especially made for this work by Mrs. J. W. Estill.

The ocatillo is another interesting plant that arrests the attention of the observer. It grows out, in somewhat sprawling fashion from a common center, as flowers with long stems sprawl in a too-open bowl. It has the appearance of a mass of rude grayish-looking sticks, varying in height from six to twenty feet, entirely without branches, and armed their whole length with thorns, hence its common names, "Devil's Coach Whip," "Devil's Claw," etc., etc. When the rains come the thorns are hidden behind tiny leaves that remind one of young apple leaves, and then there spring into being those exquisite and attractive flowers in clusters from six to ten inches long, composed of hundreds of scarlet blossoms, each about an inch long, suggesting a flame, or a banner, waving to and fro in the wind with startling effect against the gray desert sand. Then it is known as the "Flaming Sword," or the "Candle Flower," and the scientist labels it *Fouquièra splèndens*. There is only one genus of this plant and but few species, this being the one commonly seen in Arizona. Curiously enough the ocatillo is not a cactus.

There is another species — the hedgehog cactus — often seen in the neighborhood of the Grand Canyon. This forms a clump of several cucumber-like stems, armed with bunches of long spines, and with flowers two or three inches long, with deep red petals, dull pink anthers, and a bright green pistil.

Another kind may be seen here, sometimes suggesting a kind of clump of desert sea-urchins. This is the pincushion cactus (*Cactus gràhami*) of the mamillaria group. It is a quaint little plant, often no bigger than a billiard ball, but its flowers are pink and attractive, and its berries smooth bright scarlet. It grows singly or in clusters.

The night-blooming cereus (*C. greggii*) is also a native of Arizona and often delights the eye of the desert-wanderer in his camping-out expeditions. The rare and delicate beauty of this exquisite blossom can never be adequately described. It is one of these objects one must see for himself. It blooms from about the middle to the end of June, and without question, has the most beautiful flower of the State. Its flowers are about twelve inches long and six inches in diameter, and are of an exquisite cream occasionally tinged with lavender, with myriads of fine, hair-like, long stamens. As its name suggests, it blooms after sunset, and just before, or immediately on sunrise, it closes up its blossoms. Mrs. J. W. Estill, of Tucson, whose artistic painting of a desert cactus I am able to reproduce on another page, has about two hundred of the night-blooming cereus in her garden, and it is no uncommon thing, at times, to have as many as one hundred of them bloom in a single night. When not in bloom the plant looks like a half broken, dead stick. From this rude stem shoots up this rare and precious blossom.

Captain Bourke was profoundly impressed with Arizona flowers or he could not have written as he did:

"The floral wealth of Arizona astonished us the moment we had gained the higher elevations of the Mogollon and the other ranges. Arizona will hold a high place in any list that may be prepared in this connection; there are as many as twenty or thirty different varieties of very lovely flowers and blossoms to be plucked within a stone's-throw of one's saddle after reaching camp of an evening,—phloxes, marguerites, chrysanthemums, verbenas, goldenrod, sumach, columbines, delicate ferns, forget-me-nots, and many others for which my very limited knowledge of botany furnishes no name. The flowers of Arizona are delightful in color, but they yield no perfume, probably on account of the great dryness of the atmosphere.

"As for grasses, one has only to say what kind he wants, and lo! it is at his feet — from the coarse sacaton *which is deadly to animals*

except when it is very green and tender; the dainty mesquite, the bunch, and the white and black grama, succulent and nutritious."

The italics are mine. Professor Thornber, whose authority is unquestioned, assures me that sacaton will not injure stock at any time. I merely quote Captain Bourke in order that one may see how easily wrong impressions are gained and *passed on* to others.

Merely to describe accurately the species of grama grasses would require many pages. As I have already remarked, Arizona possesses more varieties of these excellent fodder grasses than any other State in the Union. The chief varieties are known as *blue, white, hairy, side oats, wert, spruce-top, crow-foot, low* and *black* grama.

The real Spanish bayonet (*Yucca baccata*) is found in Arizona, including the Grand Canyon region, in large quantities. It is sometimes known as the banana yucca on account of its banana-like fruit, which the Indians roast in the ashes as we roast potatoes. It then has a pleasant fruity-flavor. The Navahos use this in their magic ceremonies during the preliminaries to their renowned Fire Dance, which is one of the marvels of the West.

Another form of the yucca, common in the eastern and southern part of the State, is the Palmea (*Yucca elata*), and the century-plant (*Agave palmeri*) is found in the lower altitudes.

Other of the commoner desert plants are the creosote bush (*Covillea glutinosa*); the mesquite (*Prosopis velutina*); the ironwood (*Olneya tosota*) found in the west and southwest; the cat's-claw (*Acacia greggii*); the palo verde (*Cercidium torreyana*) or tree of green sticks, found in central western and southwestern Arizona; the bagote (*Parkinsonia aculeata*), also called the

palo verde, though a different species; the smoke tree (*Parosela spinosa*), so-called because it often deludes the weary desert-traveler into supposing at dusk that he is approaching the column of smoke ascending from a camp-fire; the desert willow (*Chilopsis linearis*); the desert juniper (*Juniperus utahensis*) commonly spoken of as the cedar; the alligator-bark juniper (*Juniperus pachyphlæa*); the nut pine, or pinyon (*Pinus edulus*), the delicious nut which forms a staple article of the diet of the Indians,— Navahos, Havasupais, Wallapais, Hopis, etc.,— who are near enough to the plateaus to gather them. This nut, by the way, has a large market in Arizona, Nevada, California, and even in the East, though, owing to the fact that, as yet, no machine has been invented for shelling it, its use is much more limited than it otherwise would be. Thousands of pounds of a similar nut are annually imported from Italy, which, in time, should be supplied by the Arizona-grown article, for it is far sweeter and more delicious in flavor.

Other trees are the one-leaf nut pine (*Pinus monophylla*); the common yellow-pine (*Pinus ponderosa*); and the native cottonwood. This latter is in several varieties, one (*Populus MacDougali*) being found in western and southern Arizona, while another (*P. acuminata*), is found in the east and the north. It is also called the narrow-leaved cottonwood. Nearly every desert stream is lined with one or other of these trees, their pale trunks and light green leaves soon becoming a distinctive feature of Arizona landscapes. There are at least four other cottonwoods.

In the Havasu (Cataract) Canyon is a wonderful profusion of willows which line the creek for miles.

Bourke, than whom no man knows Arizona better, says:

"At times we would march for miles through a country in which grew only the white-plumed yucca with trembling serrated[1] leaves; again, mescal would fill the hillsides so thickly that one could almost imagine that it had been planted purposely; or we passed along between masses of the dust-laden, ghostly sage-bush, or close to the foul-smelling joints of the 'lediondilla.'"

The yucca referred to is sometimes called the Spanish bayonet (*Yucca baccata*). This is a noble plant, with its cluster of sharp bayonets as the base, from which rises a shaft crowned with a cluster of flowers. These are waxy, cream-colored blossoms, sometimes tinged with purple, crowded so close together along the upper part of the stalk that the effect is a great, solid mass of bloom, three feet long. When the sun shines upon it at certain angles it needs little stretch of the imagination to see it as a glorious golden candlestick flaming before the hillside altar of God's majesty and sublimity.

The mescal is a common variety of the agave, or century plant, from the leaves of which the Mexicans and Indians both make an intoxicating liquor. Another yucca-like plant is the amole, or soap root, which has a slender shaft crowned with a cluster of white flowers. The root has been used from time immemorial by Indians and Mexicans for soap. It is pounded between two stones and produces a fine lather.

The peculiar climatic conditions of Arizona make its winter flora essentially an annual flora. The summers in the valleys are so hot that all except the hardiest plants are short-lived. When the rains begin the growth begins, when the rain ceases, or soon thereafter, the life of the plant ends, and in that brief period must be its growth — blossom, fruit, seed. But in the winter the development is more slow. The cold retards growth. During this time the plants develop a good root sys-

[1] The leaves are not serrated but filiferous.

tem, sending their roots as far down as possible, or, in the case of the lily family, or tubers, storing water in their bulbs for the following year's growth. The Indians hunt for many of these bulbs and regard them as especially delicious additions to their diet.

The winter plants, thus provided with an abundance of moisture, are ready for the warm days of February, and flower and seed with great rapidity, though their leaves and rosettes are a long time in preparation, growing slowly into vigor, ready for the brief, quick, flowering time.

On the other hand, the summer plants are shallow rooted, come up as soon as they have moisture, and have a life ranging about six weeks or two months. If there is a drought for ten days many of them disappear. But none of them — practically speaking — can be made to grow in winter, no matter how warm the weather may be, and equally so, the winter growers never bloom in summer, no matter how cold it may be. They are certainly saturated with the individualistic spirit of the age.

It must never be forgotten that Arizona has many wonderful mountains, eight, nine, ten, eleven, twelve thousand feet in height. In the shadowy places of these peerless peaks, where springs are numerous, ferns of great variety and entrancing beauty abound. Few States in the Union can show so wonderful a collection of indigenous ferns, but to describe them with accuracy would require a small volume.

After a rain at the proper season the desert sands blossom forth into a gorgeously glowing carpet of radiant beauty. Here you may find the desert lily (*Hesperocallis undulata*), with its pure white flowers delicately striped with pale green and blue on the outside,

with yellow anthers and a white stigma, while its buds have a bluish tinge. It reminds one much of the Easter Lily and sends one's thoughts rambling off over the world's oceans and countries to far-away Palestine, and all that Easter means springs into thought-life at the sight of these exquisite and dainty blossoms.

There are remarkable differences between the winter and summer floras of Arizona. In the colder months the alfilerilla springs up with great rapidity and carpets the mesas and valleys with its fern-like leaves, and purple-pinkish flowers. When young it forms rosettes close to the ground, but grows taller and more straggling. The ovary is beaked by the united styles, and the beak, when the seeds ripen, separates into five long tails, which twist spirally when dry and untwist when moistened. Hence the children's name for them, "clocks." Other names are pinkets, pin clover, stork's bill, but the commonest name of all is "filaree," a corruption of the Spanish *alfilerilla,* from *alfiler,* a pin.

On the other hand, a rather rare plant is the phacelia (*Phacelia glechomaefolia*) which may be found now and again in the Grand Canyon in shady places. There the flowers are often quite white, though under better conditions they are usually violet. Another variety of phacelia (*P. crenulata*), the desert heliotrope, is one of the striking plants, standing from six to eighteen inches tall, with purplish stems and handsome coarse foliage, all rough, hairy and very sticky. The flowers are lilac, with purple stamens and pistil. Still another phacelia is named *Arizonica* and is a small desert plant, not at all pretty, the flowers coming in tightly coiled clusters, the general effect being mauve. The phacelia *distans* is also fairly common. Now and again, in the protected canyons, I have found the pretty whispering or golden

bells, (*Emmenánthe penduliflora*), with their pale yellow corollas. At first they are erect, then they gracefully droop until they hang down on their slender pedicels. When they wither they become quite dry and papery and as the wind shakes them they give forth a gentle sound, which makes one think of fairy bells.

Somewhat similar in general appearance to the phacelias are the numerous borages which are found in the Grand Canyon and all over the State. These generally have rough, hairy stems, about a foot tall, with yellow or white flowers about one-fourth of an inch long in effective coiled clusters. The green leaves of the young plants are eaten by the Pima Indians. The *nievetas* is another fairly common plant with pretty little white flowers, each with a yellow crest in the throat. It sometimes grows in patches and then covers the ground around with white, like a light fall of snow, hence the name, which is diminutive for *Nieve* — Spanish for snow.

Saccato Gordo belongs to this same family. It has bright orange, red-spotted flowers, but the foliage is very harsh. It is very common in southern Arizona and forms rank thickets in fields and waste places. It is so valuable for grazing that it was called by the Spaniards saccato gordo (*Amsinckia tessellata*), which means fat grass.

There are also the comb-seed (*Pectocarya linearis*), also called the tufted borage, and the stickseed (*Lappula occidentale*), the name being given because the nutlets are armed with barbed prickles, forming burrs.

The poppies are not forgotten in Arizona, the native poppy (*Eschscholtzia Mexicana*) being found in many places; its cups, however, generally being of a paler yellow than the deep golden sheen often found in California.

There are also the dainty and attractive cream cups (*Platystemon Californicus*), their slender hairy stems crowned with creamy blossoms that whiten the mesas and valley meadows.

The evening and desert primroses (*Lavauxia primiveris*), sometimes called sun cups, with no stem, but attractive nevertheless, the flowers with long, slender calyx-tubes, resembling stems, springing from a clump of rather downy root-leaves, often greet the eye. I have found them all over the State.

Of the sunflowers there are several varieties, the golden gailliardia (*G. Arizonica*), and the Arizona dandelion (*Malacothrix glabrata*), being the most common. The latter is a very attractive plant, with several flower stalks, which spring from a pretty feathery tuft of bright green thread-like root-leaves, that are often tinged deep red. In the rocks, with attractive flowers and foliage, one may often see the slender and bent stems of the *Senècio Lemmoni*, named after my old friend John G. Lemmon, who, with his wife, botanized all over this wild country, when the Apaches and Navahos were on the warpath. There is also an abundance of yarrow, desert-snow (*Eriophyllum lanosum*) on the mesas of the northern part of the State, and the desert stars (*Eremiastrum bellioides*) are often found. Then, too, there are the tallow weed (*Picradenia odorata*), and the miasma weed, or golden crown (*Verbesina encelioides*), neither of them having attractive names, yet, often, at a distance, masses of these flowers have a most striking and attractive appearance.

The Indian paint brush (*Orthocarpus purpurascens*) is also common, more particularly on the northern plateaus. The Spaniards and Mexicans call this *Escobita*, which means little broom. There is also a smaller variety known as the owl's clover (*O. purpureo-álbus*), a

pretty annual, which occasionally has branches like a candelabrum. It is found only in the high regions.

Of the mustards Arizona has its full share. The flowers of this family spread out their four petals in the form of a cross. They generally grow in clusters and are very attractive to honey bees. Thousands of people have seen and enjoyed the beautiful clusters of magenta flowers of the *Arabis eremophylla* at the Grand Canyon, and the peculiar title *Dithyrea wislizeni* at the Petrified Forest. This latter grows from six to twelve inches high, with small white flowers, and funny little seed-pods sticking out at right angles from the stem. Then there is the shield-leaf (*Streptanthus Arizonicus*), with arrow-shaped leaves, with a bloom and tinged with purple on the back. The sepals are pearly-white, the petals yellowish and veined with purple. Another member of the same family is the Golden Prince's Plume, so-called by Helen Hunt Jackson, author of *Ramona*. The flowers are bright-yellow or cream-colored, and they are arranged in the form of a long feathery wand. Growing near to Tucson, among the rocks on the hillside near the Desert Laboratory, may be found a few *Dryopetalon runcinàtum*, with its half-inch wide flowers, consisting of a lilac-tinged calyx and white petals, prettily toothed, forming a dainty, rather flat-topped cluster. White bladder-pods, too, are not uncommon in the mountain canyons, and the yellow variety may also be found. Indeed this is named after Arizona (*Lèsquerella Arizonica*).

Even more prolific than the mustard family is the pea family, over three hundred species alone being found in Arizona. The deer-weed (*Anisolotus Wrightii*), is a valuable bee-plant, the flowers clustering in close little bunches along the stem, forming wands, and are somewhat reddish. Then there is the golden pea, sometimes

called the buck-bean (*Thermópsis Montana*), often called the false lupine. It is a very handsome, thrifty-looking plant about two feet high, its smooth bright green foliage contrasting finely with the clusters of clear yellow flowers, each about three-quarters of an inch long. Then of the lupines, the mesas at times are brilliant with them, the blue lupine (*Lupinus sparsiflorus*), and the sand lupine (*L. micensis*) being the most prominent. In addition, there are the hairy pea (*Anisolotus trispermus*), and the Texas pea (*Astragalus nuttallianus*), the latter belonging to the milk-vetch, or loco-weed family. The cowboys fairly dread the sight of some species of these plants, for the stock eat them and deaths are not uncommon from their poison. Two other varieties of the loco-weed are found in the *Astrágalus Nothóxys,* with rich purple flowers, shading to white at the base, and the *A. MacDougali,* which is a very attractive plant with pale lilac and white corollas, and a hairy calyx, forming pretty clusters about two inches long. Of the sweet peas, there are the narrow-leaved (*Lathyrus graminifolius*), one of the commonest and most welcome to the eye.

The plantain family is well represented in the southern and more barren regions in the Indian wheat (*Plantago fastigiata*), a most valuable forage for stock. There are several distinct species of this.

The gilias are to be found occasionally carpeting the desert floor for miles, the two commonest varieties being golden hills (*Gilia aurea*), which, as its name implies, has a rich yellow color, and the downy gilia (*G. floccosa*), one of the tiny, dainty desert plants, that with its blue flowers is always so welcome.

There are also the wild buckwheat (*Eriogonum racemosum*) with its pale downy stem and small white and pink clusters of flowers and the buckwheat bush (*E.*

fasciculatum), which grows one foot high, with feathery, flat-topped clusters, and the sulphur flower (*E. Bakeri*), so called because of its sulphur colored flowers. This latter is found only in the summer. Then, too, on the plateaus of the Grand Canyon region one will often find the bottle-plant (*E. inflàtum*), with its extraordinary shaped and swollen hollow stalks, and its peculiar swollen branches, on which tiny yellow flowers appear.

Of the pigweeds there is the desert lamb's-quarter (*Chenopodium incanum*), and the hop sage and tumbleweed. These latter are often to be seen in droves, driven before the desert winds. Then there are the patota (*Monolepsis Nuttalliana*), and the desert saltbush (*Atriplex elegans*), a shrubby saltbush now used as a hedge in the most fashionable gardens of San Diego, Santa Barbara, etc., on account of its dainty, elegant, and attractive appearance.

One who observes will also see the slender fescue (*Festuca octoflora*), and the annual spear grass (*Poa Bigelowii*).

Of the mallow several are found. In the mountains of southern Arizona one sometimes may see the Arizona wild cotton. It is a fine shrub from four to eight feet high, with smooth leaves, and cream-white flowers tinged with pink on the outside. The scarlet and salmon mallows (*Sphaeràlcea pedàta and S. Coulteri*) are very common, their graceful wands of brilliant bloom, shading from luminous scarlet to clear pale-orange giving delight to all who see them. The low mallow (*Malvastrum exile*) is neither as common nor as attractive, yet it is often found and is valuable as a forage in spring.

Here are the Bronze Bells, that of course Frank Miller of the Glenwood Mission Inn, at Riverside, California, would call Mission Bells, and no one could find

fault. For, dear little silent bells, they have their mission which is to bloom even though only the Grand Canyon — this desert of rudely carved rock — sees them. Yet as visitors go down the trails they find them, often in large numbers, and they bring cheer, refreshment, and delight. Nodding on their slender stems, much like bronze in color — a kind of greenish-yellow, streaked and spotted with maroon — with long curling tips of a three-pronged pistil, their weird beauty is both alluring and satisfying.

In the dry season one may often find the beds of streams and rivers fairly covered with acres of the bee-plant (*Cleòme serrulata*). The smooth, branching stem is sometimes as much as eight feet high. The buds are purple, and the delicate flowers, with threadlike flower stalks, grow in a handsome feathery cluster, sometimes two feet long, with numerous bracts. It is because the leaves of this plant, when crushed, give off a rank, unpleasant smell, that it is commonly known as skunk-weed.

Certain of the sunflower family are found in profusion in summer, among others the tansy aster (*Machaeranthera tanacetifolia*), the yellow weed (*Eriocarpum gracile*), and the golden crown, or miasma weed, already described.

Then who that has wandered over Arizona's hills and plains in summer has not been attracted to the thousands of trailing four o'clocks (*Allionia glabra*), the narrow-leaved umbrella wort, and the pink sand verbenas (*Abrònia villòsa*).

There are several kinds of purslane found in Arizona, among which are the common pursley (*Portulaca oleracea*), and the desert rose-moss (*P. pilosa*), the latter being especially dainty and attractive at a short distance. Then there are the desert purslane (*Calyptridium monan-*

drum), and the carpet-weed (*Mollugo verticillata*).

Of the morning glories the principal ones are the common purple one (*Ipomoea purpurea*), the blue (*I. hederocea*) and the scarlet (*I. coccinea*).

Another common flower found in many of the canyons, plateaus, and desert areas in the State, is the datura, or jimpson weed (*D. meteloides*). The white flowers are sometimes ten inches long, tinged with lilac outside, and droop like wet tissue paper in the heat of the afternoon sun. The medicine-men of the Navahos and other Indians often use it to produce the same effects that the dervishes of Africa produce with hasheesh. I have seen them, often, in a perfect frenzy, dancing, shouting, gesticulating, prophesying under its effect. The Havasupais dread it, and though it grows commonly in their glorious canyon home, teach their children to shun it as being as dangerous as "bad white man's bad whiskey."

One also sees the bledo, or careless-weed (*Amaranthus Palmeri*), one of the tumble-weed family, and the fringed amaranth. But one of the commonest of plants is the Mexican poppy, so-called because of its superficial resemblance to a poppy. The mesas become covered with it, and for the short period of their blooming they make of the desert floor a rich, glowing carpet of color. There are a number of varieties of the Calthrop family, of which the Mexican poppy is a member, to be found blooming in the summertime.

It has been claimed by some writers that many of the wild flowers of Arizona were introduced by the Spaniards, and the lilies, narcissus, amaryllis, rosemary, lavender, etc., have been specifically named as introductions. But Professor Thornber assures me that all the flowers with but one or two exceptions are indigenous.

And now that I have come to the end of my space for

this chapter I look over the list and find I have omitted the dainty Mariposa lilies, seen early in May in the Grand Canyon, the irises, or blue flags, which are to be found about Flagstaff and at high altitudes elsewhere in the State, the yerba mansa, or lizard's tails (*Anemopsis Californica*), the pale comandra (*Commandra pallida*), of the sandalwood family; various sandworts which climb the highest mountains; the several kinds of blue larkspur, which the Spaniards and Mexicans still call *Espuela del Caballero,* the Cavalier's spurs. Then there are the canyon anemone (*A. Sphenophylla*); the trailing barberry; and the shrubby hydrangea (*Fendlera rupicola*). This latter is found in great quantities in the Grand Canyon and is a tall, handsome shrub, covered in May with white blossoms. The small syringa (*Philadelphus microphyllus*), nothing like as beautiful as the California variety, is often found, and at the Grand Canyon one may see the Apache plume, growing to the unusual height of four or five feet, with pale, woody branching stems. The flowers are white, something like a wild rose in shape, with beautiful golden centers. Then there is Fendler's wild rose, the fern bush, the silky cinquefoil, the fairy dusters, and the deer brush, or mountain lilac, the snowy ceanothus, which covers the mountainsides with its drifts of bloom and fills the air with delicate perfume.

Thus one comes to realize the wonderful variety of the Arizona flora, its exquisite and beautiful as well as its rarely unique qualities, and the more he knows the more he enjoys and appreciates it.

CHAPTER XV

THE SYMPHONY OF THE MINERALS

Just as certain lands are the natural home of the Troubadours, Singers, Romancers, and Poets, so is Arizona the land of the Mineral. Gold, silver, copper, turquoise, malachite all sing the song of her glory and unite in a symphony of her progress and advancement.

From the earliest explorations of the Caucasian race within her borders precious metals were found. Coronado looked for them in 1540, but he wanted them already mined, already made into vessels, already minted, and was too disappointed in not finding them to realize what he overlooked. Espejo came half a century later and found rich mines in quantity; Oñate followed, and from that time on the clang of the hammer on the drill was heard throughout the land, and the smoke of the reduction furnace was seen ascending through the pure blue of the Arizona atmosphere. To-day ruins of many ancient adobe furnaces and other devices for the extraction of the precious metals are often found, and piles of slag, some of it rich in unextracted wealth, give evidence of the richness of the ores discovered.

To-day Arizona leads all of the States in the production of metallic wealth. The total money value of the product of Arizona's mines is nearly $203,000,000 per year, leading Montana, Michigan, Colorado, Alaska, and Nevada. Arizona leads the world as a copper-producing country, as will be seen on reference to the chapter on Cochise County.

Oatman is Arizona's latest boom-camp, yet it is not a new camp. For many years two of its mines have been well-known as dividend-makers. In 1914 the dividends of the Tom Reed mine amounted to $627,000 or sixty-nine per cent. of its issued capital. In six years it produced over four millions of dollars and paid dividends of almost two millions. It has been producing $100,000 per month from four thousand tons of ore, with but twenty stamps and a working force of about one hundred and fifty men. The Gold Roads mine is still older than the Tom Reed, and has its well developed bodies of ore.

In the last few years mining in Arizona has been conducted on a much safer and surer basis than ever before in its history. This is owing to several important factors, all of which have contributed to this end. These are, First — The new, improved and cheaper methods of extracting the mineral from low-grade ore; Second — The control exercised over stock and other financial operations of new and old mines by the State Corporation Commission; and Third — The fact that in connection with its university the State has its Bureau of Mines, under competent, scientific and practical direction. Its function is thus stated:

"To conduct in behalf of public welfare such fundamental inquiries and investigations as will lead to increased safety, efficiency, and economy in the mining industry of Arizona. The work follows two broad lines that are of the greatest concern — the safeguarding of the lives of the miners and employees of the metallurgical and mineral industries and the development of more efficient and less wasteful preparation of our mineral resources."

Thus miner and operator are both helped; the prospector is encouraged and guided; the small-capitaled mine-owner is aided to find methods by which his mine may be

worked at a profit to him, instead of conditions compelling him to transfer his interests, for a small and altogether inadequate sum, to the wealthy persons or corporations who alone have the funds for developing which make profitable operation possible. Then it is well to have some official guard energetically exercised in reducing the hazards of the occupation, preventing the accidents that annually carry off many lives, and, as far as may be, the unfavorable conditions in many mines and metallurgical plants which endanger life, or reduce unnecessarily the vitality of employees.

While the Bureau of Mines is allowed by law to make qualitative tests of rocks gratis, and also to answer definite questions as to the presence of certain minerals in samples sent in which can be answered without an assay, it is not allowed to do assaying except on receipt of the fee, which is established by law.

The actual work of the Bureau has done service of inestimable value to the State. Having gained the confidence of both miners and operators it has accumulated a vast amount of knowledge, practical, scientific, and theoretical, pertaining to the mines. Being constantly called upon to give helpful suggestions it has gained a knowledge of ores and their handling not possible to those working only in a limited field. The result is that, being also a Department of the University of Arizona, the Bureau is able to impart a rare and unusual quantity of eminently practical knowledge to its students. It is in these serviceable lines that most mining schools have failed, yet it is self-evident that practice should accompany and go hand in hand with theory. The usefulness of the education received is enhanced by the fact that the United States Bureau of Mines, working cooperatively with the State Bureau of the University, and

having its complete assaying plants and laboratories here, is able to give its aid and counsel.

In furtherance of its practical work the College of Mines sends out printed lectures and bulletins of general and special interest and lecturers who go wherever required in the State for organizations, towns, cities, or camps where special knowledge is asked. It also has a correspondence school which seeks to increase the efficiency of all who take its courses, though they may be unable to attend the actual sessions of the college.

In its personal educational plan it seeks to begin at the foundation of mining knowledge, and lead its students up, step by step, to its higher and more scientific branches. Practical work in prospecting and in field geology is required, then when it comes to the reduction of ores and extraction of metals, opportunities are afforded of *engaging practically* in cyaniding at Pearce, Tombstone, and Wickenburg; concentration at Hayden, Globe and Miami, Inspiration and Ajo; and smelting at Douglas, Hayden and Globe. Mining methods underground are also taught in the great mines at Ray, Bisbee, Globe, Miami, and Ajo. Thus the student gets into the very atmosphere of the life he is later expecting to live, and his education has that positive quality of fitting him for the work he expects and desires to do.

When it is realized that twenty-five per cent.— one-quarter — of all the adult males in Arizona are engaged in the mining industry, in one form or another, the importance of this college in training its future workers is apparent. Its present director, as he has been from the day of its inception and organization, is Charles F. Willis, to whom I am much indebted for many of the facts of this chapter, and from whom, by addressing him

at Tucson, Arizona, the important bulletins of the Bureau may be obtained.

This digression — a most important and necessary one — was suggested by the comparison instituted in my own mind between the old and the new methods of mining. Progress in methods is in the air. Efficiency, the prevention of waste, the heightening of power and ability are new watchwords of the age. How often, in the older days, thirty and more years ago, have I sat with the old-time prospector, as he rested after his evening meal by the side of his tiny camp-fire, and listened to his wonderful stories of great strikes, and how near he himself had several times come to making his "eternal fortune." Then, too, I have seen this same old prospector make his tests for minerals and wondered at his simple, primitive and crude methods. Education is changing all this; yet it is to be regretted that we are rapidly losing one of the picturesque features of our earlier-day pioneer civilization.

What rugged, out-of-door men they were! Generally large, bearded, rudely-clothed, rough-spoken, they were full of courage and types of determined persistence. They were nearly always accompanied by a burro, or two, on which their "grub-stake," a few tools, a gold-pan, a roll of blankets and a gun were packed. Hour after hour, day after day, they wandered up the ravines and gulches, over the foothills and into the canyons, up and down the slopes of the mountains, eyes ever downcast, alert for "float" that might indicate the presence of the precious metals. What danglings of "great strikes" hung perpetually before their eyes; what alternations of stupendous hopes and colossal fears of glorious exhilarations and fearful depressions they suffered! Yet they persisted, tortured with fierce and biting cold, frost,

A TYPICAL MINING SCENE, YAVAPAI COUNTY, ARIZONA.

blizzards, ice, and snow in winter, with, in summer, penetrating, scorching, and withering heat, swirling dust-devils, parching desert and alkali *playas,* driven crazy for want of water, or insane by overwhelming and suffocating sand-storms. How can one help the inflooding of his soul with a feeling of profound sympathy for these brave men and a corresponding appreciation of their daring persistence.

Then there was another and somewhat later type, though both classes existed side by side. This was the settled prospector, who found a promising region, built himself a log hut, a stone cabin, or a shake shack on the mountain or canyon side, near " wood and water " if possible, and then resolutely put in his time driving a few drill holes here and there to test what his more cursory investigations had promised.

Were you ever with such men overnight, or for a week or more? I count it one of the rich privileges of my rather varied life that I have been allowed to associate intimately with them. They can teach much to the man of faith, courage, persistent determination and cheerful optimism. And when it comes to yarns, stories, tales, Edgar Allan Poe, Bret Harte, Mark Twain, Jack London, O. Henry, Frank Norris, Rex Beach, Stewart Edward White, Peter Kyne and Booth Tarkington combined cannot equal them in thrilling interest, blood-curdling effectiveness, absorbing fascination, and downright convincing, all-pervading, satisfactory lying! I know more than half a dozen prospectors all of whom at one time owned the United Verde Copper Mine — of course when it was a prospect. One of them sold it for a burro; another for a quarter of venison; another for one hundred and fifty dollars cash; another for a one-eyed mule; and still another for a few plugs of tobacco. And as they

told me they sat spitting tobacco juice into the little campfire and ruminating upon what they "might have been" had they had the foresight to hold on. For the United Verde to-day is worth into the millions — nay, scores of millions — and it is doubtful if it could be bought at any price.

The prospector of the future can never be the picturesque liar that the prospector of the past has been. The big surface bodies have practically all been found, and prospecting now must be for the deeper bodies of ore, or for greater bodies of low-grade mineral that, by modern processes, can be worked in vast quantities at a profit. He must change in other respects, also. He must be educated, at least, in the fundamentals of geology and mineralogy. It must not be possible for him, as one prospector recently did, to send in a specimen of sodalite, which has no value, and suggest that it be assayed for gold, silver, lead, copper, platinum, molybdenum, vanadium, tungsten and bismuth. And this request was no joke. He seriously thought he had struck a universal ore and deemed himself already richer than Clarke, of the United Verde, John P., John D., and the other Crœsuses of our Western World.

Such men as this have often stood in the way of legitimate mining development. Their exaggerated, because ignorant, notions of the values of their prospects have led them to ask exorbitant prices *in cash* for that which the working miner regarded as at least somewhat of a risk. For, no matter how favorable outside and prospect indications may appear, it takes time, knowledge, energy and much capital to put a prospect upon the paying basis of a real mine. Prospectors too often complain that capitalists wish to crowd them out by demanding a controlling interest in their properties before they will

advance the needful capital for development, and sometimes this is true. But, as a rule, the criticism legitimately lies in the other direction. The prospector places an unreasonable valuation upon his mere prospect and expects either an impossible cash payment for it, or a large and major holding of the stock issued to secure its development. Education will show him the foolishness and impossibility of both these attitudes.

Of the "wild cat" mining schemes of which Arizona has been the object and the victim, much could be written. Every wild cat proposition is a definite and certain injury to the real mining interests of the State, and every good citizen not only frowns upon them, but condemns and seeks to expose them. The Corporation Commission of the State is now required by law to pass upon and approve all stocks — mining or otherwise — before they are allowed to be offered for sale.

Furthermore, Arizona has so many legitimate mines, and such a preponderance of honest prospects, that no careful and reasonably cautious person need be afraid to engage in the industry. And when one considers the large incomes, let alone the vast fortunes that mines have made, and are making every year in Arizona, it can well be seen why the State is so proud of its mineral wealth. It should not be forgotten, also, that the Arizona Chapter of the American Mining Congress maintains an office in Phœnix, with local branches in Globe and Tucson, the main object of whose activities is to bring together sellers and buyers of mining properties.

Here are a few points the prospective purchaser of a mine should insist upon from the owner: A map of the relative location of the claims; one of the district, especially if other mines of importance are located in it, which shows their location and their relative location to

the claims offered; an assay map, showing where certain ores were taken and certified copies of the assays; exact measurements and full particulars of all the development work done; exact particulars of the veins or other ore bodies uncovered, with the assay values before referred to; its relation to transportation, fuel and water and relative or exact costs of these important items; the possibilities of mill- or dam-sites, if these are likely to be needed; the accessibility to the claim, etc. These are all important, and the wise contemplative purchaser will not spend a cent upon any project where these particulars are not readily forthcoming.

I wish now to give a few particulars of some of the great mines of the past and present, with some of the reasonably assured outlooks for the future.

Ever since American occupancy of Arizona, there have been persistent rumors of "lost mines" of fabulous wealth in the Santa Cruz Valley region that used to be worked by the Mexicans, and earlier still by the Spaniards, as far back as Kino's day. The only foundation the historian can find for these vague rumors is that in 1736–41 a marvellously rich deposit of silver was discovered between Guevavi and Saric. A crowd of treasure-seekers poured into the region, but, as it was not a mine, but a *criadero de plata,* the king of Spain, in accordance with kingly custom, claimed it as his own.

There seems no justification for the assumption that the Jesuits worked rich mines in Arizona, further than Kino's reports to his superiors and the king of Spain stating valuable deposits of gold and silver had been found, and that "even in sight of these new missions some very good mining camps of very rich silver ore are now being established."

The Santa Rita, and several other mines, however, were undoubtedly worked prior to the possession of Arizona by the United States, and to these reference is made in the chapter on Santa Cruz County.

One of the noted mines of its day was the one discovered by Jackson McCrackin in southern Mohave County, about six miles north of Bill Williams Fork, on August 17, 1874. For a while it yielded as high as $200,000 per month, mainly from a stringer of high-grade lead carbonate, found within a vein over eighty feet in width. The ores at first treated averaged about seventy-five dollars per ton in silver and twenty per cent. lead, but the lead percentage increased and the silver decreased, until, about 1881, operations were practically at a stand still. McCrackin was an important figure in early Arizona politics, and in due time married Josephine Clifford, the widow of a former army officer. She has written much about Arizona, and is still engaged in writing on a Santa Cruz, California, daily, though nearly eighty years of age. She was honored with a "Day" set apart and named for her by the officials of the Panama-California International Exposition, at San Diego, in 1916.

The Vulture was another famous mine. Over ten millions of dollars were taken from it before 1890, for many an old-timer "told me so." It was discovered in 1863 by Henry Wickenburg, from whom the town, eleven miles away, on the Santa Fe, Prescott & Phœnix, was named. Report also has it that when first worked the mine was almost a pile of loose rock, with gold visible anywhere across a thirty-foot ledge. Miners became rich by simply filling their pockets or lunch cans with the quartz which was about half gold. For a while the ore was worked in *arastras,* and at one time more than forty

of these old-fashioned mills were at work on Vulture ore. In 1865 two mills were built, one of them repaying its builder at the rate of $3,000 a day as soon as it began operations, but ore soon decreased in value, though in 1866 the main claim was sold to Phelps of New York for $75,000. About 1873 it shut down, and it has had many and varied vicissitudes. It is now in the hands of a new company which has found ore almost as valuable as that of the pioneer days, so, in the words of a recent Arizona orator, "the old bird is now holding up her head and again giving forth her raucous cry in proud triumph."

The story of the Copper Queen, the great wealth-producer of Bisbee, is told in the chapter devoted to that city and the county of Cochise, and the stories of other old and new mines are told in other pages, as recorded in the Index, to which the interested reader is referred.

Few mines in the world have been more widely heralded than the United Verde, commonly known as Senator Clark's Copper Mine. I could write a book on the stories given to me by prospectors and others as to the original ownership of the prospect, what it was sold or traded for, and of the subsequent fortunes of the poor fellows "whose find had made that fellow Clark rich."

To attempt to give a reasonably accurate and connected story of the ups and downs, the good and ill fortunes, of the camp before it came into Senator Clark's hands would require more space than is at my disposal. Suffice it to say, a claim was located in 1877 and called the Verde. Adjoining claims were filed upon in time, and bought, sold, traded, stolen, abandoned and relocated. Finally, in 1882 F. F. Thomas went over the region, saw or imagined the possibilities, got an option,

went East, raised the money, organized the United Verde Copper Company in 1883, with James A. McDonald as president, and Eugene Jerome as secretary and treasurer, left New York March 23d of that year, soon started a fifty-ton furnace and made a great run on oxidized ores, giving large returns of silver. A town site was laid out and named after the secretary, Jerome.

Of course when copper went down to seven cents a pound the mine suffered. It was in a most inaccessible region. Expenses of freighting, etc., mounted up frightfully, and though men with considerable money and influence took hold of it, there was a time when the miners, not being paid their wages, threatened to take possession and destroy the plant. Dr. James Douglas examined the property but deemed it too far from transportation facilities to be worked profitably. Then came Clark, who leased it in February, 1888, and when his co-workers had made runs and completed examination he bought control in 1889. By 1894 a narrow-gauge road was built to connect with the branch line running from the Santa Fe main line to Prescott and Phœnix. It is one of the most tortuous and winding railways in the world, but it led to one of the most rigidly conducted of mining camps. For twenty-five years it has been producing enormously, and the miners claim they are working in a mountain of almost solid copper that also contains valuable and profitable amounts of silver and gold. It is common talk that no one man is allowed to work all over the mine so that he can know what it is as a whole, and the story is also told that on one occasion an eastern magnate asked for a price on the property. He was told that he could send his own engineers and buy it at his own price on the mere computation of the mineral *actually in sight*. When this was found to amount to over a thousand mil-

lion dollars the offer to purchase was withdrawn. And so the stories go. Yet here is one of the latest facts. It was long ago decided that it was not an ideal conception that led to the location of the old smelter and town on top of the mine, when far finer locations could be had in the valley. So, though its initial cost was found to be not less than six millions of dollars, it was decided to build the new town of Clarkdale, on the west side of the Verde River, six miles away. The new smelter has an initial capacity of twenty-five hundred tons a day, as compared with the old one, which could handle from a thousand to twelve hundred tons. This increased capacity will allow the milling and smelting of lower grade ores than was possible in the old plant, as well as give a greater profit in the handling of the high grade ores. A standard gauge railway, thirty-nine miles long, is now operated from the Santa Fe to Clarkdale, which passes through a territory rich in smaller mines. With a smelter so close at hand ready and willing and capable of reducing their own ores, these mines will now be able to operate, and a large activity is bound to ensue.

It is not out of place here to refer to a most important phase of present day Arizona mining. *It is preeminently a pioneer in new processes.* At the New Cornelia, for instance, low grade ores are being handled by the steam shovel, and careful experiments conducted to find the most effective and economical processes. Mines that are foremost in this particular are the Inspiration Consolidated, at Miami; the Copper Queen, which is one of the Phelps-Dodge properties; the Commonwealth, at Pearce; the T-P property, in the Senator District, Yavapai County; and the Arizona Copper Company, at Clifton, where leaching is being followed in treating its tailings from its oxide concentrating plant. All these experi-

ments are in the hands of the foremost metallurgists of the world and cannot fail to result in great and lasting benefit to the mines of the State, as well as of the outside world, and they represent a noteworthy feature of Arizona's mining progress.

Profitable placers were discovered in Arizona in early days by miners passing through to or returning from California, even as early as "the days of old, the days of gold, the days of '49." But nothing more than the most desultory kind of work was done until 1858, when the gold placers of the Gila were discovered, some twenty miles above the junction with the Colorado, but extending for several miles along the river. A new town sprang into existence, called Gila City, and over five hundred miners were at work here at one time, some of them taking out large quantities of the precious metal. But the richest diggings were too far away from the river, dry-washing not being successful enough to be profitable, and the difficulties of getting water too great to be overcome, so before the year 1862 the place was practically abandoned and the buildings washed away by the flood of that year.

Most of the miners, however, found occupation in a new "discovery." Thirty or forty miles up the Colorado from Yuma, Herman Ehrenburg started a town that bore his name, and five or six miles away in the Arroyo de la Tenaja gold placers were found in January of 1862. For a time the Los Angeles papers were full of booming accounts of the new discoveries and a population variously estimated or reported at from five hundred to as many thousands was at work. Large amounts of coarse gold were gathered, but, although a good-sized town sprang into existence, by 1864 it was practically deserted. When I visited the ruins some fifteen years

ago one could see the hopes which had animated its founders. But Ehrenburg was almost deserted and La Paz entirely so. And if there is anything on earth more depressing than the ruins of a once-active mining camp, I do not care to be brought under its influence.

In 1863, the Weaver placers were discovered near Antelope Mountain, about eighty-five miles northwest of where Phœnix now stands. For a time they yielded heavily. Then "Rich Hill," "Lynx Creek" and other mines were discovered, all of which were more or less productive for several years.

Las Guijas placers are described in the Santa Cruz County chapter.

There are many other placer deposits in Arizona. Those in the Plomosa District, in Yuma County, lying east of the Colorado River between the Plomosa Mountains and the Castle Dome Range, give a return of sixty-four cents per cubic yard. Twenty-five dollar nuggets have been found. The district covers approximately seven thousand five hundred acres, and in 1912 produced almost $10,000 by panning after rainfall.

The San Domingo Wash, in northern Maricopa County, covers an area of twelve hundred feet by two and a half miles, with a reported average of forty cents per cubic yard. There is a possibility of water storage for this field.

The Leviston district has about three hundred acres of placer ground, running from fifty to seventy-five feet in depth, which has yielded in tests from three cents to twenty-eight dollars per cubic yard.

The Old Hat district covers an area of twenty-five thousand acres, with an average thickness of one hundred and fifty feet. The Quijotoa and Greaterville districts in Pima County have both been worked inter-

SANTA CRUZ RIVER BRIDGE, NEAR NOGALES, ARIZONA.

mittently with more or less success, but in the most indifferent manner, for many years past.

As soon as capital is available, or newer methods of working them are discovered, Arizona's placers will undoubtedly mean millions of additional returns.

It would take a volume as large as this to tell of all the fraudulent mining schemes of which Arizona has been the victim. The scoundrels who perpetrated these frauds not only injured the innocent persons who were taken in by them but also injured the reputation of the new country.

The "Lost Mine" myth, as well as that of the "Ancient Spanish Mine" has been worked to the utmost. Thousands of dollars and scores of lives have been lost on these two false trails alone, though there is just enough color of truth in both of them to deceive the honest simpleton.

In 1899 Governor N. O. Murphy issued a formal letter of warning addressed to outside investors in Arizona mines, frankly stating that men in the Territory were making false and fraudulent claims and bidding every one beware. A certain "Doc" Flowers, a true Get-Rich-Wallingford character, was swindling eastern investors right and left on his Spenazuma mine, located in Graham County, which, while he claimed it to be the richest mine in the world, was surpassed by scores of unpretentious Arizona prospect holes.

Warner, of Safe Cure and Observatory fame, whose telescope is now at the Mount Lowe Observatory overlooking Pasadena, bought the Hillside group of mines in Yavapai County for $450,000 on which he paid $50,000, cash. While ordinary stock sold at $1.00 per share, he also issued one hundred thousand shares at $5 each, on which he personally guaranteed a cash dividend of thir-

teen per cent. At Warner's failure, soon after, the mine reverted to its original owners and the stockholders could do nothing but protest, without avail.

The Arizona Diamond Swindle, of 1872, became of almost international fame, and it was exposed by Clarence King, the geologist, whose *Mountaineering in California* is one of the classics of Western literature.

I can remember when a New York firm had the country excited over a so-called great platinum discovery in Havasu (Cataract) Canyon. I was forbidden to go into the Canyon by the farmer of the Indian Agency, who had received orders from the Agent to allow no person, under any consideration, to visit the region of the claims. I knew the place well, knew there was no suggestion of platinum in the region, and fought the scoundrelly attempt to deprive the Havasupais of the best part of their reservation and their privacy and security by a fraudulent mining claim. It was soon demonstrated there was no platinum in the region.

One might write very learnedly about the many kinds of minerals found in Arizona. This, however, is unnecessary, for the list has been prepared, up-to-date, and a copy of it may be had from the Director of the State Bureau of Mines, at Tucson. It is a comprehensive list and shows that over one hundred and twenty-five distinctive minerals are found in greater or lesser quantity, and more or less paying amounts.

Of the wealth of the State gained from minerals the following tables will give some competent idea:

	1915	1914
Tons ore (all kinds) mined	9,612,559	8,009,927
Values recovered:		
Copper, pounds	459,972,295	393,017,400
Gold, ounces	201,513	208,957
Silver, ounces	5,649,020	4,377,994

	1915	1914
Lead, pounds	21,738,969	15,003,068
Zinc, pounds	18,220,863	9,792,337
Estimated tons copper ore in 1916 production		10,000,000
Estimated recovery of copper (pounds) from ore tonnage, 1916		600,000,000
Copper ore concentrators and tons treated daily, 1913, seven plants		14,000
Copper ore concentrators and tons treated daily, 1916, seven plants		40,000
Smelters operating and rated capacity, 1915, nine plants, capacity (pounds)		450,000,000
Smelters operating and rated capacity, 1915, nine plants, capacity (pounds)		600,000,000
Market value of Arizona metals, 1914		$ 59,956,029
Market value of Arizona metals, 1915		90,806,349
Number of men employed in Arizona mining and ore reduction (approximately)		30,000
Annual amount paid in wages, more than		$ 40,000,000.00
Capitalization of the eleven companies outputting the bulk of Arizona copper		64,000,000.00
What 6 per cent. interest on this investment would mean annually		3,840,000.00
Dividends paid by eleven Arizona copper companies, 1916 (estimated)		30,000,000.00
Total valuation placed for taxation purposes on mining property in 1915, based on production		159,109,288.80
Total dividends of record paid by Arizona copper producers to date		225,000,000.00

These eleven producers are, in the order of dividend amounts paid, Copper Queen, United Verde, Calumet & Arizona, Arizona Copper, Old Dominion (combined companies), Detroit Copper, Superior & Pittsburg, Miami Copper, Shattuck-Arizona, Shannon Copper, Ray Copper.

	1915	1914
Dividends and profits earned by small copper producers, of which there is no complete record, approximately		20,000,000.00
Dividends from gold, silver and lead production of early days, much of which no records were kept, estimated		100,000,000.00
Total estimated profits paid by Arizona mines from all metals		345,000,000.00

Arizona's output of metals, by counties, is shown in the following table, which gives the metallic output of each county, and the total value for 1914, and also the output of ore and the average values per ton compared for 1914 and 1915. (This list is given on page 209.)

The following summary was issued by the Arizona State Bureau of Mines, January, 1917, showing the figures for Arizona Mines in 1916.

"The output of gold, silver, copper, lead, and zinc from mines in Arizona in 1916 had a record total value of nearly $203,000,000, compared with $90,806,349 for 1915, according to the estimate of Victor C. Heikes, of the United States Geological Survey, Department of the Interior. The notable output of copper and the high prices of metals both assisted in this increase of 123 per cent. There were record productions, also, of gold, silver, copper, lead, and zinc.

"The production of gold from Arizona mines increased from $4,166,025 in 1915 to approximately $4,427,000 in 1916, an increase of over 6 per cent. The production of gold from copper ores in most counties was naturally greater than in 1915, but there was a marked decrease in the output of bullion from amalgamation and cyanide mills, particularly in Mohave and Maricopa counties. Several new gold mines were added to the list during the year, especially in the Oatman camp, Mohave County, but the production was not sufficient to offset the decline in the output of the older properties. A new 200-ton mill was being completed for the United Eastern property, and considerable ore was opened at the Big Jim and Gold Ore mines.

"The production of silver from the mines increased from 5,649,020 ounces in 1915 to a record output of about 6,823,000 ounces in 1916. As the market price was much higher, the value increased from $2,864,053 to nearly $4,490,000, an increase of nearly 57 per cent in value. There was no great change in the production from the Commonwealth property which is principally a silver producer, so the in-

MINE PRODUCTION OF GOLD, SILVER, COPPER, LEAD, AND ZINC IN ARIZONA, IN 1915, BY COUNTIES

From U. S. Geological Survey, Department of the Interior. (Figures by Victor Heikes.)

County	No. of Pr'd'c'rs	Ore	Gold*	Silver*	Copper	Lead	Zinc (Spelter)	Total Value
		Short Tons	Fine Ounces	Fine Ounces	Pounds	Pounds	Pounds	
Cochise.....	67	1,888,435	59,205.29	3,034,714	170,887,812	13,129,004	87,705	$33,295,788
Coconino	2	200	37.01	913	66,774	.....	.....	12,913
Gila	52	2,575,649	4,120.49	328,648	103,562,364	124,756	.....	18,381,099
Graham	7	323	4.98	3,482	27,307	203,062	.....	16,191
Greenlee	34	1,266,899	2,316.39	81,210	51,096,225	.....	.....	9,030,896
Maricopa	25	31,123	13,468.08	10,988	44,260	194,477	.....	300,867
Mohave	35	227,435	78,678.89	287,214	998,671	6,459,557	17,382,849	4,405,894
Pima	51	35,394	330.02	55,881	3,561,783	57,824	252,527	692,497
Pinal	48	2,928,639	2,915.56	424,842	67,725,718	61,095	16,620	12,132,599
Santa Cruz	30	14,360	319.37	68,734	810,774	1,192,492	432,582	293,023
Yavapai	107	614,843	38,307.39	1,343,363	59,229,103	161,750	48,580	11,851,688
Yuma	59	29,259	1,827.99	8,995	1,961,504	154,952	.....	392,894
Total, 1915 ..	517	9,612,559	201,531.46	5,649,020	459,972,295	21,738,969	18,220,863	90,806,349
Total, 1914 ..	395	8,009,927	202,166.62	4,377,994	393,017,400	15,003,068	9,792,337	59,956,029

* Includes placer production.

crease is to be credited largely to the remarkable output of copper ore.

"The mine output of copper surpassed all records and estimates, as it increased from 459,972,295 pounds in 1915 to approximately 693,000,000 pounds in 1916. The value of the output, on account of the unusual market, increased from $80,495,152 to nearly $190,000,000. The increase of 135 per cent in the value of copper alone in Arizona was therefore more than the value of the total output of the state in the previous year. All the smelting plants of the state were worked at full capacity and made much greater shipments of copper bullion. The plant at Sasco, in Pima County, was again operated and made a large contribution. The Inspiration mine was milling nearly 500,000 tons in August and was producing 11,000,000 pounds of copper, an output that made it one of the largest producers in the state. The Ray Consolidated, Miami, United Verde, and United Verde Extension made great increases. The Swansea property, in Yuma County, made a larger output, and a large leaching plant was being constructed at Ajo, in Pima County.

"The mine production of lead increased from 21,738,969 pounds in 1915 to a record production of over 26,000,000 pounds in 1916. The value of this output increased from $1,021,732 to $1,768,000, or 73 per cent. The Copper Queen and Shattuck-Arizona mines, in the Warren District, and the Tennessee mine, in Mohave County, continue to contribute the largest part of the lead output.

"The production of zinc from the mines increased from 18,220,863 pounds, valued at $2,259,387, in 1915, to about 20,980,000 pounds, valued at $2,874,260, in 1916, an increase of nearly 27 per cent in value. The greater part of the zinc ore and concentrates was shipped from the Golconda and Tennessee properties, in Mohave County. There were, however, two new and important shippers of zinc ore —the Magma Copper Co. in Pinal County, which opened up zinc ore and constructed a concentrator late in the year, and the Duquesne property, in Santa Cruz County. Shipments were also made from the Kingman Zinc Co., near Kingman, the San Xavier mine, in Pima County, and in the Gemmill-Randolph tailings at Crown King. Possibly 28,000 tons of crude zinc ore and concentrates were shipped from the state during the year.

"Dividends paid to December 1 amounted to nearly $34,000,000. The contributors were the Copper Queen, Inspiration, Calumet & Arizona, United Verde, Ray Consolidated, Miami, Shattuck-Arizona, United Globe, United Verde Extension, and Grand Gulch.

It can readily be seen that in so brief a chapter as this it is impossible to do more than merely *hint* at the mines

of Arizona. It is no exaggeration to say that I could write a dozen volumes on them and then not begin to exhaust the subject. When one sees the vast regions, still unexplored, and realizes the wonderful possibilities of mines that have been "pecked" into the earth's crust, while every thousand feet of descent, or of cross-cut, may reveal treasures undreamed of, he can see that it is no unreasonable or foolish imagination which dares the prophecy that fifty years' time from now will see so great an activity in Arizona mines as to dwarf into utter insignificance all the work — large though it is — that is being accomplished to-day.

CHAPTER XVI

STOCK RAISING IN ARIZONA

Horses, cattle, sheep, and goats were brought into America by Spaniards. Possibly Stephen the negro, who went ahead of Fray Marcos de Niza through Arizona, rode a horse or a mule. If so, that was the first sight of such an animal in Arizona. Coronado and his men, in 1540, entered the region on horses, and to most of the people the animals were strange and frightful, especially when it is recalled that the horsemen carried their rude guns and fired them now and again at the natives and near them, to impress them with the magical prowess of the newcomers.

Until Juan de Oñate, however, there were no domestic cattle of any kind located or settled in the country. After his conquest of New Mexico, in 1598, and the colonists began to come all varieties were introduced. In due time sheep and goats were given to the Christianized Indians, but there is no specific record as to whether they ever received horses, mules, or cattle. It is reasonably suppositional, however, that the Apaches and Navahos, as soon as they learned the value of horses and cattle, helped themselves, for they were ever a little slack in their recognition of the law of *meum* and *tcum*.

From the Spanish colonists, therefore, we really date the introduction of stock into the country, and, by the very exigencies of the case, stockading, fencing, corralling being impossible, range feeding came into existence.

Here came the necessity for the evolution of the cowboy. Spanish and Mexican first learned how to drive cattle; how to make *la riata,* corrupted later by American cowboys to lariat — how to "throw the rope," cut out the animal needed; mark, cut or brand the animals so they could be recognized at a distance.

When, therefore, the United States took possession of Texas, and later of New Mexico, stock-raising and range-feeding were well established Mexican industries, and the life of the cowboy — El Vaquero — was as definitely understood as that of the sheep-herder, the gardener or the tailor. By contact with the Mexicans the trade and all its tricks were learned by many Americans before the conquest of New Mexico, but from that time on it became a regular business for El Gringoes — los Americanos — as well as the Mexicans.

It was no gentle, easy, kid-gloved task in those early days. Apaches were wide awake, alert, hostile and aggressive in the south, and Navahos in the north, with occasional extra bands of raiding Yutas, Comanches, Mohaves and others from the north and west. To be a cowboy meant nerve and craft, ability and skill, courage and daring. And, indeed, there cannot be said to have been much of a real cattle industry until after the power of the Navahos was broken by Kit Carson rounding them up and "corralling" them at the Bosque Redondo, in 1862–3, and General Crook crushed the Apaches near "Hell's Hip Pocket" in a cave a few miles from where Fish Creek Lunching Station now is on the famous Apache Trail.

Beginning in the late 'sixties and early 'seventies the business assumed noticeable proportions; the military posts needed cattle, the miners demanded beef, and the demand ever evokes the supply. Then as the country

grew in population, and California began to require cattle in larger herds to supply its markets, the ranges filled up, until, when I first came into the country over thirty-five years ago, most of them were overstocked, and all of them filled to their utmost capacity.

Those were the days of the cattle barons who made their fortunes in a few years. The increase was rapid, the expenses small, the ranges good and extensive, and prices high. But, occasionally, when a drought came, firms that seemed as solid as the National Banks went under. Ruin came sharp and swift. Water pockets and natural reservoirs were scarce, and while in a few places snow remained on the high peaks most of the year and the rivers ran perpetually, the major portion of the country depended upon a fair rainfall and the reliability of the springs. When these failed the cattle died by thousands. Hence I came to regard the cattle-industry as a very uncertain one. It was a gamble. If fortune smiled for a few years and sent plenty of rain, the hill-sides, mesas and valleys were covered with the richest kind of fodder-grasses and everything went well. One season of drought worked disaster. Wells dried up, water-courses ceased to run, springs ran dry, and not only was there no range pasturage, but, as no one seemed to think it necessary to cut and store hay, there was no dry feed to be obtained except at exorbitant prices. Two or three seasons of drought in succession meant complete ruin to the wealthiest of cattle owners. The success of the business, therefore, seemed to depend largely upon the rainfall.

To those unfamiliar with Arizona conditions the question used to arise: When there is a drought why not drive the cattle to some other region or else ship in feed and water? Only those unfamiliar with the then existent

conditions could ask such apparently natural questions. To drive cattle there must be feed and water on the way. Drought *meant* drought in Arizona, and there was neither feed nor water, hence driving was impossible. To gather the cattle from the range during periods of drought, and ship in feed and water for them was equally impracticable on account of the expense, and while to the humanitarian it seems horrible to contemplate the deliberate abandonment of cattle upon a feedless and waterless range to certain death, the Arizona stockman faced the certainty as kings and generals face the awful losses of their soldiers in war.

Something might have been done, in my opinion, even in the early days, before irrigation was much practiced, to provide emergency feed, but Arizona stockmen could never be brought to see it. There was a kind of fatalism in their habit of mind, a stolid reliance upon the coming of the rain, and, if it failed, a stoic resignation akin to the "kismet" of the Mahometan.

It was noticed by some stockmen, however, that during periods of drought, cattle would force themselves to eat the chollas and prickly pears, that ordinarily they would not touch. Although they suffered cruelly from the vicious spines, they still lived, some of them even thrived. It was also observed that, in regions where the cactus abounded, more particularly in southern Arizona, the stock was able, somehow, to tide themselves over the periods of drought until rains brought an abundance of fresh forage and water. Investigation and study soon demonstrated that it was to the cactus the stock turned for both food and water, and, despite their evident discomfort, were thus enabled to escape death from starvation and thirst.

This led some few of the more progressive cattlemen,

as well as the scientific botanists and agriculturists of the Experiment Station to make experiments in the singeing of the cactus, to promote their growths, and encourage development along the lines suggested by Burbank's much-heralded achievements. A torch was constructed, somewhat after the style of a plumber's torch, fed with gasoline, and the chollas and prickly pears subjected to the flames. Some stockmen used green mesquite or paloverde to which they fastened rags dipped in kerosene, and produced the same results. Chollas singe more easily than prickly pears, the inflammable spines upon them spreading the flames. But when so singed the cattle browse them so closely that the edible succulent branches are destroyed from which the new growth comes that bears the fruit. Hence it was found better for the perpetuation of the plants to cut therefrom the parts valuable as forage, throw them upon piles of dry weeds, and then set fire to the pile. This singed the feed, destroyed injurious range weeds, and yet avoided the destruction of the plant by too close contact with the heat. It also saved the young plants growing up around the parent stem.

On the other hand, the lobes or pads of prickly pears are so large and the spines comparatively so few that it is almost impossible to injure the plant by singeing, and no matter how closely they are grazed the closely eaten stumps send forth new shoots again as soon as the conditions are favorable.

Of the food value of the cactus much has been written that is unreliable. As a desert ration, where water is scarce, *combined with alfalfa,* it produces excellent results, but here I am considering it merely as an emergency ration. Cattle will eat of the chollas and cactus clean when little or nothing else can be obtained, but sheep,

CHOLLA.

YUCCA.

PRICKLY PEAR.
Found growing on the Arid Lands of Arizona.

even though starving, can scarcely be induced to touch the prickly pear pads. On the other hand, they will eat the *fruit* of the cholla with avidity, and seem to thrive fairly well upon it.

Hence the scientists and practical farmers have found that it is a good plan to foster the growth of both chollas and prickly pear, *as emergency rations,* on the range, to help tide over periods of drought.

Another fodder plant also has been introduced into Arizona which helps out in a solution of the problem. This is the well-known alfilaria (*Erodium cicutarium*), commonly called filaree, of California. While we designate it as of California there is no doubt but that it was introduced into the Golden State, Mexico and South America by the Spaniards, and from these points has spread, mainly by the distribution of sheep, and the carrying of hay on the lines of freighting travel. It thrives only where the winters are comparatively mild and where there are fair fall and winter rains. One has but to know the history of freighting between Arizona and California in the early days, 1860's, to know where alfilaria most abounds in Arizona. The frontier mining camps, ranches and forts were all supplied from California. Food, machinery, mill and mining supplies, and live stock were brought in, and mineral products hauled out. One of the most noted of the freight and stage roads extended from Los Angeles, through the San Gabriel Valley, over the San Gorgonio Pass and the Colorado Desert to Dos Palmas, largely following the line now traveled by the Southern Pacific Company's *Sunset Route.* Here the stage-road swung east and north to Ehrenberg, then a freight and steamboat station of considerable importance, crossed the Colorado River and proceeded by way of Tyson's and Cullin's wells, and

Harrisburg to Wickenburg, from where roads led directly or indirectly to Date Creek, Congress, Prescott, Phœnix, Florence, Tucson and other territorial centers, in addition to numerous military posts.

To those who have seen freighters stop for feeding, either at relay stations or where night overtook them, the spread of alfilaria seeds needs no explanation. Hay is either carried on the wagons, or is sent ahead and covered with canvas, ready for the purpose. At best the conveniences are limited and litter strews the ground. From this the spread of the seeds takes place.

Then, too, in 1870 and 71, a disastrous drought prevailed in southern California, which led to the driving into Arizona of thousands of head of sheep and cattle. The virgin mesas were a godsend to the sheep-herders and cattlemen, and this led also to the greater development of these industries in Arizona.

There are several varieties of the alfilaria, the best for forage purposes, however, being the red-stemmed, or *Cicutarium,* already mentioned. It grows best at altitudes from one thousand five hundred to four thousand five hundred feet. Below a thousand feet, in dry countries, it seldom thrives, and the cold of the higher levels prevents its growth until spring and summer. The warm winter rains of the moderate altitudes foster its growth, and thus the spring forage supply is materially increased by its presence, while in no way interfering with the later growth of forage grasses. The only care it needs is to watch that it is not grazed too closely.

Now and again an Arizona stockman can be found who cuts alfilaria for hay. It makes good hay, and cattle as well as sheep eat it readily and thrive upon it. But it grows in large enough quantities for hay only on

the richer soil of the swales and valleys, hence its cultivation for this purpose is limited.

There are those who are under the impression that there are no more stock ranges in Arizona. This is a grave error. There have been great changes and limitations in the ranges, but there are still hundreds of thousands of acres of open land over which cattle and sheep are allowed to graze. In the early days, when population was limited, there were practically no limitations or restrictions upon the running loose of stock. Might was the law. The cattle owner ran things his own way. Any and all unfenced land, whether owned privately or still belonging to Uncle Sam, was "range." One result, however, of the increase of population was the breaking up of the ranges. The past indifference of the Government as to who used unclaimed public lands, and, to put it plainly, by sheer physical force controlled the major portion of the grazing, gave place to homesteading, legal apportionment of land and water, and official leasing and supervision of public land under the Forestry Service. This change spelled the end of the old methods. Hence new methods must be found to meet the demand for increased numbers of sheep and cattle, for, it is evident, as population increased, there was corresponding call for more animals to supply the meat market.

The growing of alfalfa in large quantities, under irrigation, has seemed to meet the new needs admirably. In the Salt River Valley, around Tucson, on the Colorado River, and in a score of places where irrigation is feasible, alfalfa has been planted. It thrives abundantly, and thousands of tons are put up every year, the yield of the Salt River Valley alone being many thousands of tons. Any one who has driven out from Phœnix, throughout the valley, to Mesa, Tempe, Chandler,

Glendale and Ingleside has dwelt with delight upon the rich green alfalfa fields that now cover thousands of acres of the once barren and generally inhospitable land.

The Tucson Farms Company, in the Santa Cruz Valley, also has produced remarkable crops, and all over the State, north as well as south, alfalfa is relied upon to give the range animals winter feed. Hence the sheep and cattle industry of Arizona is now upon a steady, firm, and secure basis. The gambling element is eliminated. Given a range in ordinary seasons, the sheep and cattle men make money rapidly; when drought comes they have alfalfa to fall back upon, and while the feeding of hay is more expensive, naturally, than range feeding, it is reasonably profitable — and certain.

While upon this subject it might be appropriate to make brief reference to the well-known conflicts between the cattle and sheep men on the one hand, and between the two and the "nester" or "homesteader" on the other. These latter conflicts were the natural outcome of the periods of change. The cattle and sheep owners who, for ten, twenty, and thirty years, had been habituated to seeing their animals graze over the unoccupied public lands, and who, perhaps, had paid dearly in money, fighting, and blood, for the possession of the springs and water-holes, could scarcely be expected to look with calmness and equanimity upon the incoming of those whose presence meant the curtailing of their former freedom, the fencing, or at least the exclusion of range stock from the finest portions of the range, and the utilization of the springs, etc., for domestic purposes. Where this resentment took acute form conflicts arose, and thus gave rise to the flood of stories of elemental human passions in fierce, and, sometimes, deadly struggles.

The same elemental passions were aroused, when, during seasons of drought, the interests of cattle and sheep men clashed. John Muir, one of the most lovable and gentle of men, hated sheep. He called them "the locusts" of the mountains, foothills and plains. And he knew them thoroughly. In his first days in the Sierras he was a sheep-herder and learned how the sheep ate down the forage on the range, and trampled to death what was left, so that cattle could not pasture on any area, for several years, over which sheep had been closely grazed.

But those days of conflict practically are over. The public domain grows smaller with startling rapidity. The setting apart of large areas as National Parks and National Forests, both of which are under the careful supervision of rangers, the systematic leasing and grazing rights, the limiting of sheep and stock to certain areas, and also as to numbers, speedily checked lawlessness and conflict, so that to-day the cowboy is not the wild, woolly, picturesque, reckless dare-devil of the movies, or of the sensational story writers, and the cattle and sheep industries have settled down, in the main, to staid, sober, and unexciting occupations, in which, however, even as in the old days, men of energy, capacity, and foresight can make large returns.

In this laudable endeavor the State University is giving material help. By bulletins, lectures, summer schools and the like, it is seeking to educate the stockman in those scientific methods which will improve the value of his range stock. The slogan has gone forth, "Fewer cattle and better." All inferior and unproductive cows are to be eliminated from the range as quickly as possible, for an unfertile cow eats quite as much as one that will each year produce a calf. Then, too, the wild ani-

mals that have a tendency to make the herd restless, and move to and fro unnecessarily — these are best gotten rid of. But more important than all is the introduction of high-class, registered bulls. During the past twenty years Arizona has thoroughly tested this matter. There has been a marked improvement in the size, weight and quality of the range cattle. This has meant a large increase in revenue, and it is mainly attributable to the introduction of better sires on the range. The Hereford strains have proven themselves admirably adapted to the Arizona ranges, where they must climb mountains, endure great changes in temperature, sometimes travel long distances to water, and know how to "rustle" for feed when it is scarce. The value of good parentage is now thoroughly understood, and wise and farsighted cattlemen seek to obtain it in the pure bred bulls that they are constantly introducing upon their ranges. The same ideas also apply to the cows — the mothers. A cow to be profitable must be a regular breeder, and produce strong, vigorous calves, such as are strong enough to follow their mothers and secure a portion of their own livelihood as they travel. The mothers, too, should not neglect their calves, and should be reasonably gentle and docile. The intelligent owner now seeks to "cut out" from his herds as speedily as can be every animal that fails to come up to these requirements, and thus Arizona cattle are rapidly "grading up" to a far higher standard than is common elsewhere.

Another branch of this subject should not be overlooked, and that is the development of the dairy industry. The importance of healthy stock for dairies and the sanitary management of these establishments cannot be over-estimated. In this respect Arizona is not one whit behind the most advanced State in the Union. It has

its model dairy farms and dairies in Tucson, Phœnix, Prescott, Flagstaff, Bisbee, and all the large population centers.

CHAPTER XVII

THE STATE UNIVERSITY

THE founding of the State University of Arizona reads like a romance, and is a wonderful illustration of the remarkable way in which notoriously evil men do good things, and how politics were handled in the early days of western civilization. The following facts were gained from several of the active participants, and while some small details may be found to be not perfectly accurate, the story can be relied upon, absolutely, as a whole.

It was in 1885, while Arizona was still a Territory, that the University was empowered. In those days the Legislative Assembly consisted of two houses, as now, but the upper house was known as the Council. The Council had twelve members, the House twenty-four. There were but ten counties in the Territory, and the northern and southern districts each elected a member, thus making the twelve.

The legislature of 1885 is still referred to as "the Bloody Thirteenth," or the "Thieving Thirteenth," it being the Thirteenth Session, and many and various have been the charges of graft and extravagance brought against it. Tucson elected its members of the Council, and the southern district also elected a resident of Tucson as its representative. It was entitled to five members in the House, and of these four of the elected were Republican and one Democratic.

Before the representatives left Tucson for Prescott, which was the capital, though utterly isolated as far as

A Portion of the Campus, University of Arizona, Tucson.

railways were concerned, a quiet meeting with them and some of the leading citizens was held. It was then decided that no effort was to be made to bring back the capital to Tucson. It was too expensive a luxury to keep it fixed anywhere in the then unsettled conditions of politics. What, then, did they want? Not the penitentiary. That was already at Yuma. Insane asylum? No! Better try for a University.

No sooner were the legislators assembled at Prescott than it became known that a caucus had been held and an agreement made whereby a majority of the Council would stand together on all legislation. It was an agreement for protection of the respective interests of the various counties. Mohave came in on the strength of anti-Mormon legislation. Yuma, no removal of the penitentiary; Yavapai, no removal of the capital; Cochise, no division of that county; and one other county for a cause not now remembered. The representative of the northern district came in on Yavapai County's claim — no removal of the capital — and the southern district on no anti-railway legislation. Here then were seven men agreed — a majority — to allow no legislation that would interfere with their respective interests. In the House the balance was far more uncertain.

It happened that after the legislature had been in session for some time the majority of the people of Tucson decided that they wanted the capital back again. A fund of $5,000 was raised and a well-known citizen placed in charge of it, and sent to Prescott to lobby for this end. He was soon informed of the unchangeable agreement of the Council's majority, but he decided that for appearance's sake he must get a bill passed through the House. This was done, but, as every one knew it would be, when brought before the Council it was defeated.

As the session continued bills were passed giving Tempe a normal school; Phœnix, an insane asylum; liberal appropriations for the Yuma penitentiary; Pinal County, a bridge; Yavapai County, bonds for a railway; but Pima County, as yet, had secured nothing. The Democratic representative from Pima County, Selim M. Franklin, of Tucson, felt it was time to bestir himself. Recently from the California State University at Berkeley, he had made himself unpopular in the House by fighting against all the grafts and steals that made this session so notorious. Still, he felt called upon to draft a bill for a University. Taking it to the representative in the Council from the Southern District he asked that it be presented to the Council. Stevens, the Councilman, was a member of the majority, and, desirous of squaring himself before the people of Tucson for his adverse vote on the removal of the capital from Prescott back to his home city, not only introduced it but did it in such a way that it was passed immediately. This was essential, as there was but about a week in which to get it through the House. Coming from the Council, Mr. Franklin called it up for immediate consideration, under the suspension of the rules. But evidently he or his friends had learned the usefulness of the proper stage-setting of surrounding ourselves with the right influences. All the teachers, educators, and others interested in such a bill were induced to fill up the lobbies, and the word was passed around that the presiding officer would allow applause.

Several times I have had that speech quoted to me as the most powerful, convincing and disinterested of that whole legislature. Mr. Franklin was then but about twenty-five years of age, naturally anxious to make a name for himself in his first legislative venture. And be-

ing recently from his own " commencement exercises " at Berkeley, among other things he gave a graphic description of a future commencement *in Arizona.* The young men in their best suits, the girls in their white dresses, the anxious, proud and happy parents, the adoring and hopeful friends, the applauding crowd, etc., were all vividly pictured. " And," said the wise and diplomatic speaker, " the thirteenth legislature will go down in history as the one that made this possible. We have been called the ' bloody thirteenth,' the ' thieving thirteenth,' and, gentlemen, more or less we deserve these opprobrious titles, but in a few short years all these things will be forgotten and our names will be heralded as the ones who established the institution that gave to the young people of Arizona the great opportunity for their education."

It was a great speech, and the best evidence of that fact is found in the vote. Out of twenty-three representatives present, twenty-two voted for it, and the one who voted against it came and explained that he was heartily in favor of the University but a political pledge had prevented his voting as he desired.

The bill as passed was immediately signed by Governor F. A. Tritle. It required, however, that within two years the people of Tucson should deed to the regents forty acres of suitable land for a campus, and that the bonds for $25,000 to build should not be available until that was done. Before the time expired Charles M. Strauss got the leading gamblers of Tucson, who owned the acres of land where the University now is, to donate the required forty. When more respectable men held back and failed to respond to this great need, which meant so much to the future of the youth of the State, these men generously came forward and made possible the development of an institution which they were well

aware would be foremost, later on, in driving their mode of living out of the State.

When this was done the bonds were sold and the first building erected. This is the quaint "basement and one story" structure to the left of the present fine agriculture building. It came to be built in this way: Dr. Handy, who was afterwards shot and killed by F. J. Heney, the famous prosecutor of the San Francisco grafters, was an influential member of the board. He had just been to Stanford University where one-story buildings only were erected, and being a self-willed and strongly opinionated man, insisted that the Arizona building be of one story, as that was the last word in university building. The basement and one story was the effect of a compromise.

Another interesting and rather comical bit of history must here be recorded. Just as the building was about to be completed the Federal Act was passed providing for the appropriation of $15,000 a year towards Agricultural Experiment Stations, connected with State or Territorial Universities. Naturally, the regents desired to avail themselves of this appropriation, yet they had neither station, professor of agriculture, nor director. At this time Mr. Franklin, who made the speech that secured the passage of the bill in the House, had been appointed to the Board of Regents. No other man on the board was known to have a college degree. He, however, though a lawyer, had received the degree of Bachelor of Science, so that the board duly elected him Professor of Agriculture and Director of the Experiment Station (yet to be organized), without salary. This met the needs of the Federal Government, the appropriation was secured, and thus the regents were able to secure and appoint a competent man who was duly elected Pro-

fessor of Agriculture and also President of the University.

Now a new difficulty arose, though, of course, it had been foreseen. Here was a duly authorized university, but no students. There was not a student eligible for university work. There was not a High School in the whole Territory. Hence a preparatory school was organized, which, for many years served as a territorial high school. Then, to secure pupils, as there was no dormitory, the students were allowed to sleep in the main building. They were all youths, stalwart, strong, rough and ready — "wild colts from the ranges," and cots were placed for them everywhere, and it was a current saying, prior to the building of the first dormitory, that no boy was ever guilty of using either sheet or pillow-case. After that West Point rules for the care of rooms, slightly modified, were adopted, and have been in use ever since.

Such was the State University in its beginnings. Perfectly suited to those early day conditions, it has evolved as the State has evolved. The past years have seen marvelous changes and wonderful progress. When the present president was installed, official representatives were present from every great educational institution in the United States, and there was a dignity in the proceedings that would have been an eye-opener to any old-timer who had shared in the rude functions of the early days.

The University is now liberally treated by the legislature, and without the doing of politics. The result is that new buildings are going up, and the campus has a really university appearance. A uniform system of architecture, plain, simple, dignified and attractive, has been adopted, and as additional buildings are required

they will be placed so as to add to the effectiveness of the whole.

From the very beginning it has been an institution that has kept close to the needs of the people of Arizona. It did not call for students all over the country, but, primarily, planned for Arizonans. As already shown, it prepared itself for agricultural work while it was yet in its infancy, thus symbolizing the new Arizona that is sure to be. But almost as speedily it organized its School of Mines, for mining is one of the chief industries not only of the State, but of the Great West to which it belongs. Men like Professor Blake — a man of international reputation, who had won his laurels as geologist of the transcontinental surveys in ante-Civil-War times — were placed in charge of the various departments and attracted students not only by the power of their names, but by their genius and ability, and to-day Arizona offers a course in practical mining that can scarce be surpassed in the world. In the heart of a great and active mining region, with ready access to world-famous mines, smelters, and other reduction plants, guided by a dean, Dr. G. M. Butler, whose text-books are such forcible presentations of mining principles that they are used in several of the greatest university mining schools of the world, the Arizona School of Mines possesses opportunities against which there is none that can compete.

The same may be said of its Agricultural department. In the study of the many and varied problems that beset the farmer, gardener, stock-raiser, dairyman, etc., in the semi-arid Southwest, no other school is so well equipped. Its dean, Robert H. Forbes, is the honored and recognized authority upon all the problems that come within the scope of his investigations, and his associates

have been chosen because of their peculiar abilities and powers in their respective lines. Their bulletins are eagerly looked for, conscientiously studied, and profitably followed not only in Arizona but elsewhere where similar conditions of climate, rainfall, etc., seem to exist.

In these two particulars the University of Arizona is preeminent. It meets the peculiar needs of its people in the most thorough, competent and satisfactory manner, while at the same time it gives thorough and abundant attention to the cultivation of the liberal arts and sciences. It would be absurd for Arizona to pretend to compete in these general branches with the great Eastern or Western universities, and it makes no such pretense. But in its own fields it will ere long be a teacher of teachers, a leader among leaders, and in satisfying the specific needs of its own citizens it is building up a strong, powerful, democratic institution that is mightily influencing the future progress of the State.

Within the last few years there has been a growing demand for a department of law. Arizona's peculiar climatic and other conditions have required special legislation to meet its needs. The bench and bar alike have seen that it would be wise to train its future judges and lawyers to a full comprehension of its own peculiar laws and the needs for them. Hence the existence of the new Law department where the popular needs will be fully met.

One of its professors, Byron Cummings, who had been dean of the College of Liberal Arts in the Utah University, but who had felt the urge to explore the *Cliff* and *Cave* dwellings of Utah and Arizona, and who had made important discoveries on the San Juan River, and at the great Cliff-dwellings of Betatakin and Kitsiel, was called to Arizona to take the chair of ethnology and

archæology, and direct the work of a Museum, which Arizona feels she is entitled to, instead of allowing so many other museums to be made rich by the carrying away of important objects of antiquity which should be retained at home.

The University also is fortunate in having as the dean of its College of Letters, Arts, and Sciences, and professor of Physics and Astronomy, Dr. A. E. Douglass, for several years astronomer of the Percival Lowell Observatory at Flagstaff. There he became thoroughly familiar with the wonderfully advantageous conditions of Arizona atmosphere for astronomical work, and now that an unknown donor has placed a sufficient sum at the disposal of the authorities, a great thirty-six-inch reflecting telescope is being made by Brashear of Pittsburg, Pa., to be mounted by Warner and Swasey, of Cleveland, Ohio, which will soon occupy its own especially-built and equipped building on the north of the campus.

Thus might I go through the whole list of the professors and their associates showing their eminent qualifications and fitness for their work, and this, not in a perfunctory way, but as the sincere expression of my deepest conviction. Just one more example to illustrate. For over thirty years I have been a close student of the peculiar botany of the West, and especially of the arid Southwest, together with the arboreal and floral life of the high mountains and deep canyons of Arizona. Here are individualistic conditions found nowhere else in the United States, and just as Professor W. L. Jepson has gained international fame for the thorough, conscientious and colossal work he has accomplished in this field in California, so has Professor J. J. Thornber placed his name with equal eminence, for the work he has achieved in Arizona.

These things I say as the result of personal contact with the men. I know them and their work, both of the laboratory and in the field. And where you see men climbing snowclad mountains, traveling over waterless deserts, climbing over, around, under, and about rocks in the canyon depths of Arizona, refusing to recognize dangers, hardships, privations and positive sufferings in their zeal for knowledge, I know the influence the lives and teachings of such men must have upon the young people who pass under their instruction. It is a privilege and blessing to be coveted and highly prized.

In its president, Rufus Bernhard Von KleinSmid, not only the University but all of Arizona feels a personal pride. Still young, he has gained high honors, and came at the urgent request of the people to aid them in building up their growing institution. In rare combination he possesses high scientific and literary knowledge, is a practical man of affairs and the world, able to mingle, with dignity and affability, with all classes, is a continuous student and accomplished orator, and an acknowledged leader. As one of the foremost men of the State recently said to me, " He is the living embodiment of a refined, cultured, manly man. His very walk is a lesson to the students in what every gentleman should radiate of energy, refinement and culture."

In its location the University is ideal. Near enough to Tucson to feel in perfect touch and sympathy with all its civic life and ideals, it is yet " in the country." An electric street car and the inevitable jitney automobile readily connect them. Though there may have been some thought of placing the University " out of the crush " for the men who schemed for something else and got what they hadn't asked for, it has worked out for the highest good of all concerned. Upon elevated

ground, overlooking the valley of the Santa Cruz, in every direction surrounded with heaven-aspiring and gloriously-beautiful mountains, it is a place of pure air, abundant sunshine, wonderful outlook, perfect healthfulness, and inspiration to body, mind and soul. It was in landscapes such as are afforded here that Greece cradled her sculptors, architects, statesmen, orators, soldiers and philosophers. Like environments produce like results, and with the mental and spiritual influences thrown around the embryo citizens (of both sexes, for it must not be overlooked that Arizona has woman's suffrage), there is nothing to hinder — nay, everything to bring them out — superior results to those attained in Greece in its golden era.

Then, too, as I have practically shown, every man of the faculty is an out-of-doors man, personally interested in the country, and where their own work suggests it, going out personally, and with the students, to study, in the field, in preference to books. There are no words in the language that can too strongly emphasize the superiority of this course of procedure over the book method. An interest is awakened in the things themselves, rather than in *words* about them. The science of the schools too often is merely the science — ***knowledge*** — of words about things, instead of what it should be, viz., the knowledge of the things themselves. I have been taken to task, often, for affirming what was perfectly true, namely, that many Indians that I know have a far truer science in some things than the professors of our schools and colleges. Here the students are taught to know the things themselves and gather their knowledge from an actual study of them in the field.

Then, too, many of the professors are original explorers and investigators on their own subjects. I could

mention half a dozen who have traveled all over the State, into most dangerous and inaccessible places, sometimes with classes, sometimes without, for the purpose of solving certain problems that have arisen. And Arizona is rich in the opportunities for this kind of work, and it is a glorious and satisfying fact that its leaders of thought among the young men and women of the State are eager to go out to grapple with, and solve them.

There is an air about the buildings, campus, lecture rooms and mess hall of the University of Arizona that clearly and positively demonstrates its spirit. It as clearly says as if the words were singing out from a megaphone: "We are the training school of Arizona's future. We are shaping the destinies of the Ages. The young men and women who come here are receiving not only book-learning, but an induction into the spirit of living. We realize the high responsibilities that are already devolving upon the West. These Citizens of the Future are being made aware of these responsibilities and at the same time educated to meet and discharge them."

Here is no playground, no pastime spot for the lazy, the rich, the idle, no nursery for the vices of rich men's sons and daughters. All are at work, intensely, strongly, vigorously, determinately at work. The very air of the mountain, desert and canyon seems to quicken the step of everybody from president to last freshman. There is no man on the campus that walks with the "languid air of quality," and if ever the spirit of *mañana* possessed the Spaniards and Mexicans of Tucson, the University certainly has sprung to the very opposite extreme. Here as I write, on the campus, my window looks out where four times a day, one of the professors passes to and fro. Though no longer a young man in the ordinary

parlance, he walks with the agile, springy, vigorous step of the man who enjoys life, has work to do, and glories in his capacity to do it. He typifies, to me, the great and growing University, little known though it is to the East, of which he is so important a part.

Is it to be wondered at, then, that I find in the students a frank eagerness for education, an earnest seriousness of purpose, in both young men and women, that makes it a joy to watch them? In such a spirit the foundations of great empires are laid, and thus, in vision, do I see Arizona arise to become, for out of great tribulation, fierce warfare, unparalleled hardships, it is meet that she should rise to leadership, power, and prosperity.

Arizona has two state or public Normal Schools, one at Tempe, in the south, the other at Flagstaff, in the north. The one at Tempe was authorized by the legislature in 1885. It is located in the heart of a thriving city of about two thousand inhabitants, surrounded by the fertile ranches, orchards, and industries of the Salt River Valley, easily reached by both Santa Fe and Southern Pacific railways, as it is but twenty-minutes' ride from Phœnix. There are now ten buildings on the campus, which is a beautiful tract, thirty acres in extent, planted out to trees, shrubs, plants and flowers, which make of it a perfect bower of joyous beauty. Certainly if delightful environment is of any aid to mental development the students here are especially favored. An additional and adjoining thirty-acres has been leased by the State for a term of years which affords working ground for experiments in all lines of agriculture, stock-breeding, etc. The buildings are modern and well equipped, the dormitories, also — although an additional group-dormitory for the young women, in five groups around a patio, each group to accommodate thirty-five

students, is now being built. The principal of the school from its inception to the present time is Dr. A. J. Matthews.

The Normal School at Flagstaff was authorized by the legislature of 1899. It is located in one of the most beautiful mountain cities of Arizona where the summer heat is tempered with the snows on the summit of the San Francisco Mountain, and upon the slopes of which the city is built. Flagstaff is on the main line of the Santa Fe Railway, and the purity of its atmosphere can be understood when it is recalled that Percival Lowell, choosing a place for the location of his astronomical observatory for the study of the planet Mars, decided upon this as the best place in the United States. As needed by the growing requirements of the school, buildings have been provided, until now over two hundred students are regularly enrolled and adequately provided for. The principal from the beginning of the school to the present time is Dr. Rudolph H. Blome.

CHAPTER XVIII

THE WOMEN'S CLUBS OF ARIZONA

FEW States in the American Union owe more to women than does Arizona. It has been impossible in these pages to do full justice either to pioneer men or pioneer women. It was hard enough for men of vigor, strength, and power to resist the hardships and endure the long rides over the trails or in the stages prior to the days of railroads. Luxuries were unknown; comforts were rare; the journey was one of bare, bald endurance, without relief or respite, except to those whose souls and bodies responded to the glory of the great new, virgin, wonderful, marvelous, strange, bizarre country through which they were passing. But when to the fatigues of the unrelieved journey we consider there were added the horrors of attacks by the most ferocious, relentless, vindictive, and barbarous tribe of Indians known on the American Continent to whose tender mercies death itself was a joy, we can see that bravery, courage and loyalty to their menkind were essential on the part of all women who accompanied their husbands, brothers, fathers or sons into Arizona.

Once established in communities, however small, their lot was decidedly improved, yet there was still much to be desired. The refinements, comforts and luxuries of civilized life were accumulated slowly, and men and women alike sought for diversion in the most primitive and simple fashion. But in the hearts of the few longings for the higher culture were seething and in due time these

WOMAN'S CLUB HOUSE, TUCSON, ARIZONA.

asserted themselves outwardly. Individuals read and studied; then Chautauqua circles were formed and some slight endeavor made toward concerted action for intellectual improvement. It was in the early 'eighties that F. A. Tritle came to southern Arizona as a mining man. He was accompanied by his wife, a refined woman of dainty physique, whose mind was set upon more than the things of the body. On the 8th day of March, 1881, Mr. Tritle was appointed governor of the Territory, to succeed Frémont, and at once the family removed to Prescott, then the territorial capital. Mrs. Tritle's home soon became the center of social and intellectual life, and it was there a small history-study class was organized and successfully conducted for some years. Then a Chautauqua circle was organized, with Mrs. Tritle as president, and from this was drawn the nucleus that ultimately formed the first woman's club.

During the summer of 1895, the coming to Prescott of Mrs. May Wright Sewall, with her invalid husband, renewed the agitation for the formation of a club, and several ladies called upon Mrs. Sewall, urging her to address a meeting for this purpose. The meeting was held, and Mrs. Sewall spoke on "Women's Clubs of the World." A little sensitive as to their ignorance of the Women's Club Movement, some of those present rather resented Mrs. Sewall's address, but the desire for the speedy formation of a club was engendered, and at a second lecture by Mrs. Sewall, this time on Margaret Fuller, delivered in the K. P. hall on Tuesday, August 13, 1895, the club was organized. It was first called the Women's Club of Prescott, but a year or so later the name was changed to the Monday Club. On August 19 and 20, at the residence of Mrs. Gould, a constitution and by-laws were adopted and the following officers were elected:

President, Mrs. F. A. Tritle; Vice President, Mrs. May B. Gurovits; Secretary, Miss Florence Gould; Treasurer, Miss Blandy.

In looking over the work done by the Club in its first year one is amused at the wide ambition of the workers. There was the usual scraping up of material from encyclopedias upon subjects far remote from the interests of most of the women concerned. One member laughingly tells that she was compelled — for no refusals of work assigned were accepted — at a time when she was about to become a mother, to review the somber-hued and comprehensive subject, "The Funerals, Cemeteries, Catacombs, Monuments and noted Prisons of Paris"! It was a pity the assigning committee did not also add the Lunatic Asylums!

In due time, however, the women abandoned their high-flying mental aëronautics, came down to earth and practical affairs, organized a library association, and soon rejoiced in the possession of a Carnegie Library. Until the city took it over the women raised a monthly sum for its support.

Then they undertook to decorate the walls of the school rooms with works of art, and plant trees in the school yards. This latter activity was soon expanded to take in the streets. Then they introduced in 1904–5 Manual Training into the public schools, and for the first year bore all the expense, buying lathes, benches, tools and all necessary equipment. To-day, as the result of those efforts, a well-supplied building, laid out on stately and artistic lines, stands on the Washington School grounds, and is devoted entirely to this work.

The city plaza has been beautified, and civic betterment work in all its phases engaged in, and it now has active departments in art, literature, and music.

In the meantime other clubs were organized in various cities and towns of the Territory, principally at Bisbee, Phœnix and Tucson. The movement in the latter city began quite early, but it was not until the year 1900 that the organization was perfected and the club federated. Since then it has had marked influence for good in the community, though in its earlier days its aim was more to compensate the women of the city who had come from all parts of the United States, breaking all old cultural and social ties, by giving them the opportunity of mutual helpfulness.

Then it began to branch out into a broader scope of usefulness and a higher standard of efficiency. Study sections in Art, Drama, History, and Current Topics were organized, and this led to the gathering of a fine collection of standard works in the Carnegie Library of the city, where they have been of considerable service to the citizens generally as well as to the club members.

A study of the schools of painting of all nations, with the help of good reproductions, ministered to the love of the beautiful, and inaugurated a movement throughout the State in the interest of art and an appreciation of fine paintings. A travelling collection of good reproductions was the result of the Club's initiation.

An exhibition of paintings by American artists of national reputation, valued at twenty-two thousand dollars, is another of the Club's recent activities, and every scholar of the public schools was given an opportunity to see and study these excellent canvases, without cost, and under competent guidance.

From the beginning the Club has provided first-class lecturers upon educational, art, social, and generally help-

ful topics, and the public has been admitted free, as a rule. In this work the faculty of the State University has cooperated very generously.

The Philanthropy Committee has undertaken the equipment of the children's playground provided by the city, and it is working steadily to provide better moving pictures in the theatres for the children.

Until three years ago, the organization met wherever adequate quarters could be secured but the growing membership made a permanent club-house imperative. A lot was presented to the Club and the first steps were taken. In one year a fifteen-thousand dollar club-house was completed and more than half paid for, most of the money having been raised by subscription. This building is the club-women's contribution to the civic beauty of the city. It is artistic within and without and is equipped with all the modern conveniences. The auditorium seats five hundred people and the stage and dressing-rooms are adequate for the production of ordinary theatricals. The members of the Drama Section annually give several well-selected plays in connection with their study of the drama. Indeed, this club-house may well be called "the Little Theatre of the Southwest."

The Tucson Woman's Club believes that anything that broadens the horizon and sweetens the moment is worth while and desires the club-house to be a center for everything that contributes to the good of the community. The Club has had twelve representative women as its presidents, the present officer being Mrs. Byron Cummings, wife of the distinguished professor of archæology at the State University.

I have thus given a brief outline of the work of two of the earlier clubs. Many others might be offered showing the varied and individualistic work of these pioneer

women in laying secure and solid foundations for the intellectual edifices of the future.

Early in the history of the Club Movement in Arizona, Mrs. A. J. McClatchie, the organizer of the Phœnix Club, seeing the advantage of federation, invited all the clubs to send delegates to a meeting for a full discussion of the question. Mrs. McClatchie was the wife of Professor A. J. McClatchie, formerly of Pasadena, California, and a woman of high ideals and noble purposes. In a recent letter to one of the prominent club women of the State she thus refers to the birth of the federation:

"I had, from the beginning of my knowledge of federation work, been deeply impressed with its great potentialities — both direct and indirect. The indirect being to me, the more significant; for while promotion of civic, social and educational interests is, in general, the chief aim of club and federation work, the most far-reaching benefits accruing from it all, I believe to be the larger development of woman herself. So, quite naturally, after organizing the Woman's Club of Phoenix, my thoughts turned to uniting our work with the club forces of the territory, that we might be in a position to meet the urgent culture demands of our fast growing region and through this work attain to larger life for ourselves.

"Then came the decision of the General Federation that the club interests of the west merited the distinction, and the inspiration of the 1902 biennial meeting which, it was decided, should be held in Los Angeles. So near to us! I felt that we simply must take immediate and decisive action; for surely the women of Arizona had a distinct duty in welcoming the great opportunity which was coming to their very door, and just as surely we needed the inspiration and broadening influences which representation at the biennial meeting would bring.

"Strongly and urgently as I could, I laid the matter before our Woman's Club, where at many meetings it was discussed at length, with final decision that upon the opening of the fall work, in 1901, invitation should be sent to all the clubs of the territory to join us in a meeting for the purpose of considering federation. This was done and all responded cordially. Most of the clubs promised to send delegates, and some who could not send representatives asked to be included in case of organization.

"The meeting was called for November 18 and 19, and Mother

Nature kindly contributed two of Arizona's most benign fall days which seemed to cast their happy spell upon the meeting, for while there was some questioning as to whether our meeting would be a success the list of clubs that responded to this call comprised the Woman's Clubs of Phoenix, Tucson and Bisbee, Monday Club of Prescott, the Maricopa Chapter D. A. R., the Friday Club of Phoenix, Village Improvement Club, Florence, and the Sahuara Club of Safford — the latter by letter only. The original clubs, with the exception of the Safford club, are yet in existence, all greatly increased in membership and influence, each a credit to its special community, and five of them owning their own homes. The Safford 'Sahuara' has been succeeded by a thriving Woman's Club. It was a small club with limited membership, devoted to the study of history and literature.

It is interesting to look over and compare the Year Books issued by the Federation for by this means, more than by any other, can one gain an idea of the growth and development of the organization. The first Year Book, a modest little green pamphlet of sixteen pages, served for a four year record, and bears the date on its cover, "YEAR BOOK, 1903–1907." It contains only a list of officers for the four years, of the State, and General Federations — with which the Federation affiliated very soon after its organization — a list of the committees, of which there were but six, the Constitution and By-Laws, and the directory of federated clubs. The latter shows twelve clubs, with a total membership of three hundred and seventy-three. A striking contrast to the Year Book of Nineteen Sixteen, which is a substantial volume of seventy-nine pages, full of interesting reports from some twenty Departments and Committees, with a greatly augmented club and membership list.

The present president of the State Federation is Mrs. H. A. Morgan, of Willcox.

The eight clubs that have their own buildings are Tucson, to which reference has already been made, Bisbee, Florence, Glendale, Prescott, Yuma Valley, Madison Im-

WOMAN'S CLUB HOUSE, PHOENIX, ARIZONA.

provement Club of Phœnix, and the Women's Club of Phœnix. The latter building is a most beautiful and convenient structure, erected in 1907 at a cost (including the lot) of over $20,000. The Club is incorporated with a capital stock of $10,000, divided into 2000 shares at $5.00 each. Every member of the Club must own at least one share of this stock. From the ample porch one enters a large reception hall, containing an immense hospitable-looking fireplace. The auditorium is large and spacious, with adequate stage and dressing-rooms.

Thus the women of the new State have shown their ability to rise to the needs of the pressing hours, and by starting out with the idea that their club-houses are to be open centers of refinement and culture for all women, rather than the secluded meeting-places of the few, are furthering the cause of true democracy and mental and spiritual uplift in their respective communities.

CHAPTER XIX

THE LITERATURE AND ART OF ARIZONA

If a country may be judged in any degree by the measure of its inspirations, then indeed is Arizona a land of large power, a land unique and triumphant. For there are two classes of minds influenced towards expression by anything wonderful, remarkable or unusual in Nature. These are the minds at the two extremes of man's development — the child mind of the race and the mind of the man of highest culture. Arizona has the marvelous power of stimulating the imagination and producing literary expression to the fullest degree in both these types of mind. The child mind of the race is the Indian mind, for the adult Indian is but the race in its child stage of development. The Indian legends given in my *Indians of the Painted Desert Region* are but a mere suggestion of the wealth of such fascinating lore that Arizona has germinated and brought forth in the minds of its Indian children.

On the other extreme of the literary ladder is the modern scientist. Trained in superlative measure to observation, collation of isolated facts, arrangement and analysis, with logical deduction therefrom, schooled to perfect precision in the use of language, disciplined to exact expression, that which he writes or says may be regarded as the last word (so far as the race has progressed) of human inspiration and expression. It must also be regarded as a tribute to the inspirational power of the land that called it forth. The modern scientist is equipped

for criticism and comparison as no other man in the past history of the world could be. This is an age of easy travel, of speedy transition to every known part of the world — civilized or uncivilized. Sven Hedin wishes to traverse the deserts of Asia, and in no longer a time than it would have taken his grandfather to go to Paris and back, or at least to Moscow and back, he makes the journey, travels over the desert, and reports on it. Roosevelt desires to see unknown South America, and in four or five days (speaking colloquially) from the time of his leaving the capitals of civilization he is on the outskirts of uncivilization and about to enter its unknown precincts. The surface of the whole earth is being traveled over to find new inspirations, new sources of expression, and the scientist has been, and is, foremost in the ranks of these advance guards of knowledge. Hence he comes to Arizona not like a child, virgin to impressions, but trained to observation of every variety of scenery, from the quietly pastoral to the stupendously majestic, the serenely calm to the vividly emotional, the deliciously soothing to the rudely arousing. In other words, he is as blasé to scenery as the confirmed theatre- and opera-goer is to plays.

Yet one has but to look over the tomes — yes, *tomes* is the word, for a tome is a ponderous volume — of the scientists, all of them inspired by Arizona, to stand in amazement at their number and marvellous variety. For there they are, dealing with Archæology, Botany, Cave- and Cliff-Dwellers, Ethnology, Forestry, Geology, History, Irrigation, Jesuits, Kaolin (and other minerals), Lexicography, Mining, and all the way down the alphabet — not made for children, but the most thoughtful men and women of our advanced and progressive civilization.

But "dry-as-dust scientific tomes!" the general reader

exclaims: "Who cares even to look into such uninteresting volumes? Only a musty old professor, a big-wig, a man lost to all sense of humanity, whose juices of life were long since dried up, would care to peep into the tomes to which you refer!"

Indeed, sir, it may seem to be as you think, but in literature as in everything else within human ken:

> "Full many a flower is born to blush unseen,
> And waste its sweetness on the desert air."

Pray, allow me to be your guide to show you the desert. Mayhap you will find what John C. Van Dyke did when he stumbled upon it. Mankind has its dreads, its fears, that are just as absurd and baseless as the dreads and fears of a nightmare. The desert is one of them. Van Dyke found it full of allurement, charm, fascination, delight, enchantment. Why? The desert planted a seed in his highly cultivated soul that speedily germinated in one of the classics of the English language, produced on this side of the Atlantic.

Here is a desert — you think — of scientific words. It is one of the *tomes* of Clarence E. Dutton, and is on the Grand Canyon of Arizona. Of course, he, the author, scares "the likes of you" away from his book by making the title *The Tertiary History of the Grand Canyon District*. You're not interested in geology. No! But you are interested in exquisite descriptions of wonderful scenery. Read this, then, and let your nostrils inhale the fragrance of this one "flower" of the "desert of Arizona scientific literature." Major Dutton is describing one of the side gorges of the Greatest Gorge of Them All. He says:

> "Near Short Creek the Vermillion Cliffs break into truncated towers of great beauty and grandeur, with strongly emphasized

vertical line and decorations, suggestive of cathedral architecture on a colossal scale. Still loftier and more ornate become the structures as we approach the Virgen. At length they reach the sublime. The altitudes increase until they approach two thousand feet above the plain. The wall is recessed with large amphitheaters, buttressed with huge spurs and decorated with towers and pinnacles. Here, too, for the first time, along their westward trend, the Vermillion Cliffs send off buttes. And giant buttes they verily are, rearing their unassailable summits into the domain of the clouds, rich with the aspiring forms of Gothic type, and flinging back in red and purple the intense sunlight poured over them. Could the imagination blanch those colors, it might compare them with vast icebergs, rent from the front of a glacier and floating majestically out to sea, only here it is the parent mass that recedes, melting away through the ages, while its offspring stands still, yet the analogy would be a feeble one, for the buttes are grander, more definite in form, and many times loftier. But the climax of this scenery is still beyond.

"Late in the autumn of 1880 I rode along the base of the Vermillion Cliffs from Kanab to the Virgen, having the esteemed companionship of Mr. Holmes.[1] We had spent the summer and most of the autumn among the caves of the Uinkaret, in the dreamy parks and forests of the Kaibab, and in the solitudes of the intervening desert; and our sensibilities had been somewhat overtasked by the scenery of the Grand Canyon. It seemed to us that all grandeur and beauty thereafter beheld must be mentally projected against the recollection of those scenes, and be dwarfed into commonplace by the comparison, but as we moved onwards the walls increased in altitude, in animation, and in power. At length the towers of Short Creek burst into view, and, beyond, the great cliff in long perspective thrusting out into the desert plain its gables and spurs. The day was a rare one for this region. The mild, subtropical autumn was over, and just giving place to the first approaches of winter. A sullen storm had been gathering from the southwest, and the first rain for many months was falling, mingled with snow. Heavy clouds rolled up against the battlements, spreading their fleeces over turret and crest, and sending down curling flecks of white mist into the nooks and recesses between towers and buttresses. The next day was rarer still, with sunshine and storm battling for the mastery. Rolling masses of cumuli rose up into the blue to incomprehensible heights, their flanks and summits

[1] Mr. William H. Holmes, one of the foremost figures in American archæology, ethnology, and geology, afterwards Chief of the Bureau of American Ethnology and now Curator of Ethnology in the National Museum, Washington, D. C.

gleaming with sunlight, their nether surfaces above the desert as flat as a ceiling, and showing, not the dull neutral gray of the east, but a rosy tinge caught from the reflected red of rocks and soil. As they drifted rapidly against the great barrier, the currents from below flung upward to the summits, rolled the vaporous masses into vast whorls, wrapping them around the towers and the crest-lines, and scattering torn shreds of mist along the rock-faces. As the day wore on the sunshine gained the advantage. From overhead the cloud-masses stubbornly withdrew, leaving a few broken ranks to maintain a feeble resistance. But far in the northwest, over the Colob, they rallied their black forces for a more desperate struggle, and answered with defiant flashes of lightning the incessant pour of sun-shafts."

That is a long quotation, but its vivid power almost takes one's breath away, and I venture the assertion that there is nothing in literature that surpasses it. Yet it is but one of many such passages I might find in Dutton, inspired by the scenery and atmosphere of Arizona. Take his description, for instance, of the Grand Canyon from Point Sublime, or his account of crossing the Kanab Desert, or the Bright Angel Amphitheater. They are equally powerful, pure and stimulating.

Yet the reader must not jump to the conclusion that Dutton is a mere rhapsodist, an artist who spreads his color on canvas with his palette knife, and who is content to make big, vivid impressions, without any care for details. Read with me his purely scientific chapters. They have the definite, restrained precision of an adding machine. Every word is weighed, valued, and placed in its proper place. His observations and deductions are stated with the crystal purity of mathematical theorems. And it is this quality of restrained strength in his scientific work that makes these prose poems of his so gripping, and at the same time so valuable. One knows they are the outpourings of a clear-seeing, mathematically exact, hence truthful, scientific mind. They are descriptions to

be relied upon. One does not wish to waste his time, in this active, bustling life, in reading descriptions of scenery, no matter how graphic they are, how well written, unless they are true. Dutton's words, though vivid in coloring, rich in harmonious contrasts and powerful dissonances, meet this rigid requirement. Had he written a book on these regions for popular consumption, as did Clarence King, his namesake geologist, and superior in official station, but brother in literary kinship — whose *Mountaineering in California* has long been regarded as a classic — he would be as well know popularly as is King, and his book would forever rank as one of the chief of the classics of Arizona.

Were it not for these facts I should feel that I had devoted too much time to Dutton, but I am convinced I have already earned the reader's gratitude for introducing him to the rich treasures of this almost unknown author, speaking from the popular standpoint. Yet there are many others on the list, some of whom are a close second to Dutton. Major J. W. Powell, the richly endowed mentality that organized the United States Geological Survey, and the Bureau of American Ethnology, and for twenty or more years so efficiently directed them as to make the work of American scientists in these lines honored and respected throughout the world, found many of his highest inspirations in Arizona. His first great literary work,[1] dashed off at white heat, without any thought of care as to literary expression, or conformity to literary standards, is full of graphic eloquence, and I could fill scores of pages with quotations from it.

So also can one turn to his later *Canyons of the Colorado*[2] — a book sadly too little known because stupidly

[1] *Explorations of the Colorado River of the West and its Tributaries, Washington, 1875.*

[2] This book is now in preparation for reprinting, and as soon as

buried by an inexperienced firm of publishers — and on almost every page there are passages of burning eloquence, vivid and native rhetoric that hold one spellbound. Who is there that cannot see and feel this wonderful little piece of description that yet sets before the mind Nature's operations over a vast area. He is speaking of the sources of the Colorado River.

"This high region, on the East, North and West, is set with ranges of snow-clad mountains, attaining an altitude above the sea varying from eight to fourteen thousand feet. All winter long, on its mountain crested rim, snow falls, filling the gorges, half burying the forests, and covering the crags and peaks with a mantle woven by the winds from the waves of the sea — a mantle of snow. When the summer-sun comes this snow melts, and tumbles down the mountainsides in millions of cascades. Then million cascade brooks unite to form ten thousand torrent creeks; ten thousand torrent creeks unite to form a hundred rivers beset with cataracts; a hundred roaring rivers unite to form the Colorado, which rolls, a mad, turbid stream, into the Gulf of California.

There it is, pure prose, yet Dante, Goethe, Molière, Shakespeare, never wrote anything more poetic, and the marvel of it is that it is absolutely true. The student will also be glad to have his attenton called to another fact in connection with Major Powell's literary genius. It is well known that scientists, in dealing with the enlarging boundaries of their respective fields, are constantly experiencing the dearth of proper terms with which to express their meaning. In the realm of geology this want was especially exasperating and limiting. Today it has one of the richest and most complete vocabularies of all the sciences, and I venture the assertion that Major Powell coined more of the new words that have *stuck,* and are today in general use, than any other ten geologists or lexicographers of the world. And, further, practically

conditions justify it will be issued by The Radiant Life Press, Pasadena, Calif.

Photograph by McCullock, Phoenix, Arizona.

LOOKING UP SALT RIVER CANYON TOWARDS THE ROOSEVELT DAM.

On the Apache Trail, Arizona.

all of these words were coined under the inspiration of Arizona scenery and physiography and while he sat and thought under the pure cobalt of the Arizona sky.

But long long before Dutton and Powell, as far back as the sixteenth century, Arizona inspired Spanish pens to write of its wonders. Coronado and his *conquistadores* passed through the valley of the San Pedro and over the mountain to the far-famed "Seven Cities of Cibola." Then Ensign Tovar was sent over the desert to the "Province of Tusayan," the villages of the Hopi, with seventeen horsemen and three or four foot soldiers. Castañeda thus tells the story of the first white men's experiences with these interesting people:

When they reached the region, they entered the country so quietly that nobody observed them, because there were no settlements or farms between one village and another and the people do not leave the villages except to go to their farms, especially at this time, when they heard that Cibola had been captured by very fierce people, who traveled on animals which ate people. This information was generally believed by those who had never seen horses, although it was so strange as to cause much wonder. Our men arrived after nightfall and were able to conceal themselves under the edge of the village, where they heard the natives talking in their houses. But in the morning they were discovered and drew up in regular order, while the natives came out to meet them, with bows, and shields, and wooden clubs, drawn up in lines without any confusion. The interpreter was given a chance to speak to them and give them due warning, for they were very intelligent people, but nevertheless they drew lines and insisted that our men should not go across these lines toward their village. While they were talking, some men acted as if they would cross the lines, and one of the natives lost control of himself and struck a horse a blow on the cheek of the bridle with his club. Friar Juan, fretted by the time that was being wasted in talking with them, said to the captain: "To tell the truth, I do not know why we came here." When the men heard this, they gave the Santiago[1] so suddenly that they ran down many Indians and the others fled to the town in confusion. Some, indeed, did not have a

[1] The "Santiago" was the Spanish war-cry.

chance to do this, so quickly did the people in the village come out with presents, asking for peace.

While with the Hopis Tovar learned of a large and wonderful river, and he sent one of his captains, Cardenas, to find out all about it. Thus the Grand Canyon of the Colorado River was discovered, and here is what the historian says of the expedition:

After they had gone about twenty days they came to the banks of the river, which seemed to be more than three or four leagues above the stream which flowed between them. This country was elevated and full of low twisted pines, very cold, and lying open toward the north, so that, this being the warm season, no one could live there on account of the cold. They spent three days on this bank looking for a passage down to the river which looked from above as if the water was six feet across, although the Indians said it was half a league wide. It was impossible to descend, for after these three days Captain Melgosa and one Juan Caleras and another companion, who were the three lightest and most agile men, made an attempt to go down at the least difficult place, and went down until those who were above were unable to keep sight of them. They returned about four o'clock in the afternoon, not having succeeded in reaching the bottom on account of the great difficulties which they found, because what seemed to be easy from above was not so, but instead very hard and difficult. They said that they had been down about a third of the way and that the river seemed very large from the place which they reached, and that from what they saw they thought the Indians had given the width correctly. Those who stayed above had estimated that some huge rocks on the sides of the cliffs seemed to be about as tall as a man, but those who went down swore that when they reached these rocks they were bigger than the great tower of Seville. They did not go farther up the river, because they could not get water. Before this they had had to go a league or two inland every day late in the evening in order to find water, and the guides said that if they should go four days farther it would not be possible to go on because there was no water within three or four days, for when they travel across this region themselves they take with them women loaded with water in gourds, and bury the gourds of water along the way, to use when they return, and besides this, they travel in one day over what it takes us two days to accomplish.

Scores of volumes of Explorations and Reports from

that day to this might be quoted from, and rare pieces of description of vivid literary power given to the world, which is now totally unconscious of them. Espejo's narrative is fascinating. So is that of Juan de Oñate, the real conqueror of Arizona and New Mexico; then, when we come to our own day, Emory tells us of the journey with the Army of the West in 1846–7, and later of the Mexican Boundary Survey; Sitgreaves of the Zuni and Colorado Rivers; Beale of a wagon-road from Fort Defiance over Arizona to the Colorado River, reminding one of the reports made by Don Juan Bautista de Anza and Padre Escalante about the same time that Washington and Jefferson were making explorations into republican forms of government on the far-away Atlantic shore. Then there was Ives who came up the Colorado, and down Diamond Creek to the home of the Wallapais and even into Havasu (Cataract) Canyon and by the Grand Canyon to the Hopi villages before he reached Fort Defiance. Some of his descriptions are pure literature, as, for instance, where he describes the junction of Diamond Creek with the Grand Canyon and the Colorado River. Here it is:

"This morning we left the valley and followed the course of a creek down a ravine, in the bed of which the water at intervals sank and rose for two or three miles, when it altogether disappeared. The ravine soon attained the proportions of a canyon. The bottom was rocky and irregular, and there were some jump-offs over which it was hard to make the pack animals pass. The vegetation began to disappear, leaving only a few stunted cedars projecting from the sides of the rugged bluffs. The place grew wilder and grander. The sides of the tortuous canyon became loftier, and before long we were hemmed in by walls two thousand feet high. The scenery much resembled that in the Black Canyon, excepting that the rapid descent, the increasing magnitude of the colossal piles that blocked the end of the vista, and the corresponding depth and gloom of the gaping chasms into which we were plunging, imparted an unearthly character to a way that might have resembled the portals of the infernal

regions. Harsh screams issuing from aerial recesses in the canyon sides and apparitions of goblin-like figures perched in rifts and hollows of the impending cliffs, gave an odd reality to this impression. At short distances other avenues of equally magnificent proportions came in from one side or the other; and no trail being left on the rocky pathway, the idea suggested itself that were the guides to desert us our experience might further resemble that of the dwellers in the unblest abodes — in the difficulty of getting out.

"Huts of the rudest construction, visible here and there in some sheltered niche or beneath a projecting rock, and the sight of a hideous old squaw, staggering under a bundle of fuel, showed that we had penetrated into the domestic retreats of the Walapais nation. Our party being, in all probability, the first company of whites that had ever been seen by them, we anticipated producing a great effect, and were a little chagrined when the old woman, and two or three others of both sexes that were met, went by without taking the slightest notice of us. If pack-trains had been in the habit of passing twenty times a day they could not have manifested a more complete indifference.

"Seventeen miles of this strange travel had now been accomplished. The road was becoming more difficult, and we looked ahead distrustfully into the dark and apparently interminable windings and wondered where we were to find a camping place. At last we struck a wide branch canyon coming in from the south, and saw with joyful surprise a beautiful and brilliantly clear stream of water gushing over a pebbly bed in the centre, and shooting from between the rocks in sparkling jets and miniature cascades. On either side was an oasis of verdure — young willows and a thick patch of grass. Camp was speedily formed, and men and mules have had a welcome rest after their fatiguing journey.

A hundred yards below camp the canyon takes a turn; but as it was becoming very dark, all further examinations were postponed till to-morrow. In the course of the evening Ireteba came into my tent, and I asked him how far we had still to travel before reaching the great river. To my surprise he informed me that the mouth of the creek is only a few yards below the turn, and that we are now camped just on the verge of the Big Canyon of the Colorado.

Camp 69, Cedar Forest, April 5 — A short walk down the bed of Diamond River, on the morning after we had reached it, verified the statement of Ireteba, and disclosed the famous Colorado Canyon. The view from the ridge, beyond the creek to which the Walapais had first conducted us, had shown that the plateaus further north and east were several thousand feet higher than that through which

the Colorado cuts at this point, and the canyons proportionally deeper; but the scene was sufficiently grand to well repay for the labor of the descent. The canyon was similar in character to others that have been mentioned, but on a larger scale, and thus far outrivalled in grandeur. Mr. Mollhausen has taken a sketch, which gives a better idea of it than any description. The course of the river could be traced for only a few hundred yards, above or below but what had been seen from the table-land showed that we were at the apex of a great southern bend. The walls, on either side, rose directly out of the water. The river was about fifty yards wide. The channel was studded with rocks, and the torrent rushed through like a mill-race.

The feelings of some of the early day explorers may be well understood from a reading of the next two quotations, the first of which also shows how dangerous it is to prophesy, for the Grand Canyon is now attracting hundreds of thousands of people to view its stupendous wonders:

Our reconnoitering parties have now been out in all directions, and everywhere have been headed off by impassable obstacles. The positions of the main water-courses have been determined with considerable accuracy. The region last explored is, of course, altogether valueless. It can be approached only from the south, and after entering it there is nothing to do but to leave. *Ours has been the first, and will doubtless be the last, party of whites to visit this profitless locality.* It seems intended by nature that the Colorado River, along the greater portion of its lonely and majestic way, shall be forever unvisited and undisturbed. The handful of Indians that inhabit the sequestered retreats where we discovered them have probably remained in the same condition, and of the same number, for centuries.

The second is a vivid description of a portion of the Painted Desert:

"The summit being attained, a vast extent of country — sweeping from Flax River around to the northeast — was brought into view. It was a flat table-land, from which wide tracts had been eroded to a moderate depth, leaving exposed lines of low bluffs and isolated fragments of the removed stratum. The scene was one of utter

desolation. Not a tree nor a shrub broke its monotony. The edges of the mesas were flaming red, and the sand threw back the sun's rays in a yellow glare. Every object looked hot and dry and dreary. The animals began to give out. We knew that it was desperate to keep on, but felt unwilling to return, and forced the jaded brutes to wade through the powdery impalpable dust for fifteen miles. The country, if possible, grew worse. There was not a spear of grass and from the porousness of the soil and rocks it was impossible that there should be a drop of water. A point was reached which commanded a view twenty or thirty miles ahead, but the fiery bluffs and yellow sand, paled somewhat by distance, extended to the end of the vista. Even beyond the ordinary limit of vision were other bluffs and sand fields, lifted into view by the mirage, and elongating the hideous picture. The only relief to the eye was a cluster of blue pinnacles far to the east that promised a different character of country. It was useless, however, to take the risk of proceeding directly thither. The experience of the day had demonstrated the hopelessness of trying to drive the mules for any length of time through an untrodden and yielding soil, and it was determined, as a last chance, to go back to Flax River and ascend the bank, at the hazard of having to make a long circuit, till some Indian trail should be encountered leading in the desired direction and affording a beaten way practicable to be followed.

"The night spent upon the desert showed that this condemned region was not entirely devoid of life. As the sun declined and a pleasanter atmosphere succeeded to the oppressive heat, scorpions, spiders, rattlesnakes, and centipedes emerged from their retreats to enjoy the evening air. A collector in that department of natural history could have reaped a harvest of these reptiles in almost any part of our camp-ground."

Upon the Indians of Arizona a hundred, a thousand, pages could be gathered together of quotations, all of them interesting, and most of them deserving of classification as literature. For instance, there are the writings of Letherman, who described the Navaho as early as 1855, followed by Powell, Stevenson, Cushing, Bourke, the Mindeleffs, Fewkes, Holmes, Hodge, Hough, Dorsey, Matthews, Voth, Berard, Lummis, and a score, a hundred of others. The works of Washington Matthews are pure literature, as well as pure science. Here,

for instance, is his description of the ceremonial pictures of the Navahos:

"The pictures accompanying the Navaho rites are among the most transitory in the history of art. Similar works have been observed among other tribes, both nomadic and sedentary, and the observers have designated them as 'sand-paintings' 'sand-altars,' etc. They are drawn in all the great rites, and even in some of the lesser rites — those of only one day's duration — small but handsome dry-paintings are sometimes made. They vary in size from four to twelve feet in diameter. Sometimes the fire in the centre of the medicine-lodge must be removed in order to accommodate them. The groundwork is sand, which is conveyed in blankets into the medicine-lodge, and spread out over the floor to the depth of about three inches. It is smoothed with the broad oaken battens used in weaving.

"Before the sand is brought in, the pigments are ground to powder and put on broad pieces of pine bark, which serve as trays — or palettes, shall we say? The pigments are five in number — white, red, yellow, black, and gray. The white, red, and yellow are made of sandstone. The black is made of powdered charcoal, with which a little sandstone is mixed to facilitate the grinding and give weight to the powder. The gray, made of black and white mixed in suitable proportions, is intended to represent blue, is called blue by the Navahos, and combined with the other colors has the effect of blue in the paintings. It will be spoken of as blue in the subsequent descriptions. The Navahos use indigo and a native bluish mineral pigment to paint masks, kethawns, and other small objects; but for the dry-paintings, such a large quantity is needed that these would be too expensive. To apply the colored powder, a pinch of it is taken up between the thumb and first two fingers and allowed to fall slowly on the sand, while the thumb is moved over the fingers.

"To paint one of these large pictures may require the labor of several men — a dozen sometimes — working from early morning till late in the afternoon. The picture must be finished before dark, for it is impracticable to work on it with such artificial lights as the Indians can command. While the work is in progress the priest who conducts the ceremonies does little more than direct and criticize. The operators have received a certain initiation. They have seen the picture painted before and are familiar with its details. If an error is made the faulty part is not erased; sand is spread on it to obliterate it, and the corrected drawing is made on the new deposit of sand. The pictures are drawn according to exact and established rules. Some parts are measured by palms and

spans, and not a line of the sacred designs may be varied in them. In drawing straight lines the colored powder is poured over a tightened cord, but in a few cases the artist is allowed to indulge his fancy, thus, in drawing the embroidered pouches which the gods wear suspended at the waist, the limner may, within certain limits, give his god as handsome a pouch as he wishes and embroider it to suit his notion. The naked forms of the mythical characters are drawn first and then the clothing and ornaments are laid on.

"When the picture is finished a number of ceremonies (differing somewhat in different rites) are performed over it. Pollen or cornmeal may be placed on certain parts of the sacred figures, and one of these substances may be scattered over it. Water of medicinal infusions may be applied to it. At length the patient is brought in and placed sitting on the picture. Moistening his palms, the shaman or an assistant takes the colored dust from various parts of the divine figures and applies it to similar parts of the subject's body. Medicine is then usually administered in four draughts. When the patient leaves, others in the lodge who are ill, or fancy themselves ill, take dust on their palms from the picture and apply it to their own persons. He who has headache takes dust from the head in the picture and applies it to his own head. He who has sore feet takes dust from the pictured feet. When all are done the picture is badly marred; it is then totally obliterated,—the method and ceremony of obliteration differing in different rites,—and the sand on which it was drawn is taken out of the lodge and thrown away. The floor of the lodge is swept, and the uninitiated, entering a moment later, has no evidence of what has taken place."

A fascinating book on the Indians is *Life Among the Apaches,* by Major John C. Cremony, but neither in its discernment of the real Apache, nor in its literary quality can it be compared with John G. Bourke's *On the Border with Crook.* In this latter volume, which sparkles and scintillates with wit, humor and vivid descriptions of scenery, as well as absorbing accounts of conflicts with the Apaches, there are scores out of its five hundred pages that are pure literature and well worth quoting. The book ought to be an historical and literary text book in every higher grade school in Arizona. In the chapter on the Apaches I have given several quotations from this delectable volume. Here is a brief description of old

Camp Grant which will give one some kind of an idea as to the provision Uncle Sam made in early days for the comfort and health of his brave officers and soldiers who were protecting his frontier and making the advance of civilization possible:

"The quarters were all in bustle and confusion, and even at their best would have looked primitive and uncouth. They were made of unhewn logs set upright into the ground and chinked with mud, and roofed in the same early English style, with the addition of a ceiling of old pieces of canvas to keep the centipedes from dropping down.

"On the walls were a couple of banjos, and there were intimations that the service of the troop had been of a decidedly active nature, in the spoils of Apache villages clustered against the cottonwood saplings. There were lances with tips of obsidian, and others armed with the blades of old cavalry sabres; quivers of coyote and mountain lion skin filled with arrows, said by the Mexican guides to be poisonous; and other relics of aboriginal ownership in raw-hide playing-cards, shields and one or two of the century-plant fiddles.

The gloom of the long sleeping room was relieved by the bright colors of a few Navaho blankets, and there hung from the rafters large earthenware jars, called "ollas," the manufacture of the peaceful Papagoes, in which gallons of water cooled by rapid evaporation.

There were no tin wash-basins, but a good substitute was found in the pretty Apache baskets, woven so tightly of grasses and roots that water could no more leak through them than it could through the better sort of the Navaho blankets. A half dozen, maybe more, of the newspaper illustrations and cartoons of the day were pasted in spots where they would be most effective, and over in the coolest corner was a wicker cage of a pet mocking-bird. There were other pets by this time in the Apache children captured in the skirmishes already had with the natives. The two oldest of the lot—"Sunday" and "Dandy Jim"—were never given any dinner until they had each first shot an arrow into the neck of an olive-bottle inserted into one of the adobe walls of the quartermaster's corral. The ease with which these youngsters not over nine or ten years old did this used to surprise me, but it seemed to make them regard the Americans as a very peculiar people for demanding such a slight task.

Hamlin Garland was induced to visit the wilds of Ari-

zona to see the Hopi Indian villages, and also to witness the Snake Dance, that was already exciting the attention of the world. The result was an article in *Harper's Weekly,* full of the spirit of Arizona's great stretches of sandy waste, her glorious colorings, her wonderful aboriginal people, her marvellous mesa-heights, and above all, of that mystic quality in desert, color, people, mesa and everything that so appealed to him.

Gwendolyn Overton, whose father was an officer in the U. S. army, felt the urge to write about an Arizona maiden, born of an American father and an Apache mother, who, long orphaned of her mother, at her father's death went East to be cared for by one of his friends. There, though educated in the white man's ways of civilized life, feeling the "heritage of unrest" of her Indian blood, she finally broke loose and became an Indian. Hence the title of the book, indicated by the quotation marks. The story is a fascinating one and brought great fame to its author.

"Bucky" O'Neill, the hero of San Juan, of whom Roosevelt wrote glowingly in describing that celebrated charge — O'Neill, Arizona cowboy, prospector, miner, politician, mayor of Prescott, yielded to the urge and wrote many interesting stories of Arizona life. One of them, *The Requiem of the Drums,* attracted more than passing attention. It was about a drummer and an Apache maiden, who lived in one of the unconventional relationships sometimes winked at by the officers of the army, owing to peculiar conditions, and about the usefulness of the woman in the case who acts as a go-between with the hostile Indians and an interpreter.

Marah Ellis Ryan visited the Hopis on their picturesque mesas. She absorbed their spirit and *The Flute of the Gods* was one of the earliest outcomes of the in-

Photograph by Courtesy of Graves' Indian Store, Phoenix.

A PUEBLO INDIAN MEDICINE MAN SINGING THE " CHANTS OF THE OLD " TO THE BEAT OF THE SACRED TOMBÉ.

Photograph by Courtesy of Graves' Indian Store, Phoenix.

A PUEBLO INDIAN POTTER.

spirations she received. This book is a revelation to most American readers of the marvellous similarity that exists in the heart-throbs, the high ambitions of soul in Indian hero and heroine as well as in white-skinned men and women.

Then she essayed a joyous task, and so successfully achieved it, that the *Love Letters of an Indian* will long remain as one of the sweetest, tenderest, and most beautiful of volumes descriptive of the arousement of the heart to its highest emotion.

Many a story has been inspired by the Arizona Mexican. Owen Wister yielded to this natural suggestion and wrote *La Tinaya Bonita,* a story which appears in his *Red Men and White,* wherein Mexican mysticism, superstition, tradition and the love that knows no race, color, nor previous condition are interestingly commingled.

Sharlot Hall, an Arizona pioneer's daughter — and one who might almost be called a pioneer herself — came to Arizona in 1882, from Kansas, where she was the second white child born in Lincoln County. In the thirty-five years of her Arizona life she has seen with the observing eye, listened with the attentive ear, studied with the active brain, and understood with the loving and sympathetic heart. Nothing has escaped her all-embracing vision. With poetic insight she has seen below the surface, and with literary instinct has written of what she has seen and felt. She has stories and poems of Mexicans, Indians, soldiers, prospectors, horses, miners, mill-hands, cowboys, sheep-herders, conquistadors, pioneers, and almost every conceivable phase of Arizona life. One little volume, only, has been collected, of her poems, and it is a classic. Its title, *Cactus and Pine,* suggests desert levels and mountain heights. She is familiar with

both, and has written sweet, dignified, stately, appealing verse, real poetry, that Longfellow, Bryant, Holmes, Whittier, would have been proud to have written. Here is her poem on Arizona written when President and Congress alike were determined to make New Mexico and Arizona one State:

"No beggar she in the mighty hall where her bay-crowned sisters wait,
No empty-handed pleader for the right of a free-born state,
No child, with a child's insistence, demanding a gilded toy,
But a fair-browed, queenly woman, strong to create or destroy —
Wise for the need of the sons she has bred in the school where weaklings fail,
Where cunning is less than manhood, and deeds, not words, avail —
With the high, unswerving purpose that measures and overcomes,
And the faith in the Farthest Vision that builded her hard-won homes.

"Link her, in her clean-proved fitness, in her right to stand alone —
Secure for whatever future in the strength that her past has won —
Link her, in her morning beauty, with another, however fair?
And open your jealous portal and bid her enter there
With shackles on wrist and ankle, and dust on her stately head,
And her proud eyes dim with weeping? No! Bar your doors instead
And seal them fast forever! but let her go her way —
Uncrowned if you will, but unshackled, to wait for a larger day.

"Ay! Let her go bare-handed, bound with no grudging gift,
Back to her own free spaces where her rock-ribbed mountains lift
Their walls like a sheltering fortress — back to her house and blood.
And we of her blood will go our way and reckon your judgment good.
We will wait outside your sullen door till the stars you wear grow dim
As the pale dawn-stars that swim and fade o'er our mighty Canyon's rim.
We will lift no hand for the bays ye wear, nor covet your robes of state —
But ah! by the skies above us all, we will shame ye while we wait!

"We will make ye the mold of an empire here in the land ye scorn,
While ye drowse and dream in your well-housed ease that States
at your nod are born.
Ye have blotted your own beginnings, and taught your sons to
forget
That ye did not spring fat-fed and old from the powers that bear
and beget.
But the while ye follow your smooth-made roads to a fireside safe
of fears,
Shall come a voice from a land still young, to sing in your age-
dulled ears
The hero song of a strife as fine as your fathers' fathers knew,
When they dared the rivers of unmapped wilds at the will of a bark
canoe —

"The song of the deed in the doing, of the work still hot from the
hand;
Of the yoke of man laid friendly-wise on the neck of a tameless land.
While your merchandise is weighing, we will bit and bridle and
rein
The floods of the storm-rocked mountains and lead them down to
the plain;
And the foam-ribbed, dark-hued waters, tired from that mighty
race,
Shall lie at the feet of palm and vine and know their appointed
place;
And out of that subtle union, desert and mountain-flood,
Shall be homes for a nation's choosing, where no home else had
stood.

"We will match the gold of your minting, with its mint-stamp
dulled and marred
By the tears and blood that have stained it and the hands that have
clutched too hard,
With the gold that no man has lied for — the gold no woman has
made
The price of her truth and honor, plying a shameless trade —
The clean, pure gold of the mountains, straight from the strong,
dark earth,
With no tang or taint upon it from the hour of its primal birth.
The trick of the money-changer, shifting his coins as he wills,
Ye may keep — no Christ was bartered for the wealth of our lavish
hills.

"Yet we are a little people — too weak for the cares of state!"
Let us go our way! When ye look again, ye shall find us, mayhap, too great.
Cities we lack — and gutters where children snatch for bread;
Numbers — and hordes of starvelings, toiling but never fed.
Spare pains that would make us greater in the pattern that ye have set;
We hold to the larger measure of the men that ye forget —
The men who, from trackless forests and prairies lone and far,
Hewed out the land where ye sit at ease and grudge us our fair-won star.

"'There yet be men, my masters,' though the net that the trickster flings
Lies wide on the land to its bitter shame, and his cunning parleyings
Have deafened the ears of Justice, that was blind and slow of old.
Yet time, the last Great Judge, is not bought, or bribed, or sold;
And Time and the Race shall judge us — not a league of trafficking men,
Selling the trust of the people, to barter it back again;
Palming the lives of millions as a handful of easy coin,
With a single heart to the narrow verge where craft and statecraft join."

Here in stately meter and compulsive rhythm she sets forth the claims of the State she loves. Every line possesses a dignity all its own, demanding recognition for the native righteousness of the cause for which she pleaded. In my previous work entitled *California, Romantic and Beautiful,* when desirous of quoting a poem that should fully express the power and potency of the West, I could find nothing that equalled her lines to "The West," and I wish I had room to quote them here.

Suffice it to say that in Miss Hall's verse Arizona has a worthy voice. She is the State's first great poet, the Joaquin Miller of the arid Southwest, the singer of the Sierra Anchas, and it is to be hoped she will live to sing long.

Of the soldiers who came to fight the Indians so many

stories have been written that it would take more than a book of this size to contain them. Some of them are true and some are fiction. Bourke's wonderful books are accounts of his own experiences, and so are several of the stories of Josephine Clifford McCrackin, whose *Overland Tales* and *Another Juanita* contain personal recitals of her life and adventures while she accompanied her first husband, Lieutenant Clifford, to the pioneer army posts of Arizona. To her latest book, *The Woman Who Lost Him, and Other Stories,* Ambrose Bierce wrote an introduction, and I had the pleasure of contributing a sketch of her life which is more thrilling and exciting than any romance. In these books Arizona is pictured in the making, while the hands of the sculptor are still in the yielding clay. Those indeed were thrilling, exciting, tremendous days, when men and women alike — if women were brave and foolish enough to go out into such a land — held their lives in their hands and never knew what a day or an hour might bring forth. To illustrate: Two days before the time in which I now write I rode in a finely equipped automobile from Tucson to Tubac and the old mission of Tumacacori. We passed a score or more of autos on the journey, going and returning, and we were as happy and jolly a party as ever hurried over Arizona's fine native roads, smiled upon by Arizona's turquoise sky.

Years ago Josephine Clifford made the same trip, though in an Army ambulance drawn by army mules and accompanied by the wife of the major in charge at Camp Lowell (Tucson), a visiting officer, the quartermaster and an escort of twelve men. When near Tumacacori the party was attacked by Apaches and barely escaped with their lives. The story is thrillingly told in one of her volumes.

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Frederic Remington, whose literary ability was as great as his artistic skill, spent much time in Arizona, and he has left us many graphic reminders both in pen and brush. One of his stories appeared in the *Century Magazine* and is entitled "A Desert Romance." During the Civil War, Fort Bowie was manned by volunteers from New Mexico, commanded by Colonel Simms, who had originally been a bookkeeper in New York. The Apaches were giving much trouble, and the order had gone out that no emigrant train should leave the post except on the first of the month, when the regular soldier escort was available. But one day a Texan came into camp exhausted. He had escaped from a caravan, held up at Ochoa Waterhole. To the rescue! The Apaches resented the attempt to take out of their hands what they were already regarding as their own. But Colonel Simms' heart had been aroused by the sight of a beautiful young woman, the daughter of old man Hall, the leader of the caravan. In their anger, the Apaches made a fierce swoop on the escaping band, overriding everything, killing men, women and children as they dashed by, and driving off the Colonel's horse on which he had placed the maiden whose face had captured him. The caravan was later delayed by old man Hall, who dropped behind, with a sack full of *poisoned* food. The Apaches got him, but they also got the meal. Reaching the fort the Colonel's heart prompted him to take out a rescue party, with old man Hall's son, who asserted he was "goin' back after his sista." They met with a band of Mexican rangers, who volunteered to aid them, and also congratulated the Colonel on the great crowd of Apaches he had left dead at the Ochoa waterhole — poisoned, of course, by the old man's doctored food. The story now turns upon the treachery of the Mexican leader, who found and ran away with the

maiden, was tracked by the Colonel clear into Mexico, surrounded and shot by the Texan, while Miss Hall was safely rescued. Whether she married the Colonel and lived with him ever after, we are not told, but the story is a good one and gives a faithful picture of the conditions existent in those critical days.

Cyrus Townsend Brady, the fighting parson, whose stories have thrilled hundreds of thousands, has a good Arizona story in *Harper's* entitled "In the Box Canyon of the Gila." It is of Apaches, the slaughtering of an overtrusting farmer and his family, and of the vengeance paid out to the Indians by the soldiers. It also reveals — as a side light — the feeling some of the soldiers had in those dreadful days in that the inscription on the wall of the chancel of the little post chapel read: *Eloi, Eloi, lama Sabachthani?* — My God, my God, why hast thou forsaken me?

Prospectors and miners have ever been good themes for short stories, and Owen Wister has given us one in *Specimen Jones,* whose very name recalls one of Bret Harte's characters — the Iron Pirate — because of his thus designating the iron pyrites in the ore. Jones gained his descriptive appellation from the fact that he ever had secreted on his person various large or small specimens of the ore he had picked up in his prospecting trips.

Many are the mining stories told of Arizona,— lost mines, rich placer mines, unexpected wealth gained just when the hero was on the verge of desperation, etc., etc. The theme is inexhaustible.

Of cowboys and sheepmen the same may be said. Novels like *In the Country God Forgot, Pardner of Blossom Range, Curly, When a Man's a Man,* and a score of others attest the popularity of this inspiration. Ray Stan-

nard Baker gives, in *McClure's,* a vivid picture of one of the "roping" competitions so popular in the West, in his "The Roping at Pascoe's," and Hamlin Garland makes a cattleman the hero of his story, "Delmar of Pima," also in *McClure's.* This latter story tells of the arrogant lawlessness of the cattlemen, their hatred of the sheepmen, and their control of judges, sheriffs, and juries all to their own selfish benefit. Delmar comes in and meets them on their own ground, but by demanding strict observance of the law "cleans up" the country and inaugurates a new era of square treatment for every man. Will C. Barnes, now and for many years past in an important position with the grazing section of the U. S. National Forest Department, and for years the leader of the Live Stock Sanitary Board of Arizona, has written many cowboy stories for the magazines, his "Stampede on the Turkey Track Range" being a vivid and truthful picture of the life of the cowboy. Sharlot Hall, too, in *Out West,* gives us the "Songs of the Cowboys," as well as fascinating stories of their lives, and W. Edgar Woodruff, in the *Arizona Magazine,* under the caption "Gathering of the Cattle Clans" gives us vivid pictures of their lives and recreations.

The Mormons of Arizona have come in for their share of literary exploitation. Three-quarters of a century of abuse, slander, misrepresentation, and honest antagonism and criticism have familiarized them with the various opinions held of them by their fellow-citizens of the United States. Mormon principles have been discussed, pro and con, from the United States Senate down to every cross-roads and corner grocery. That there are, or were, fundamental differences in the religious beliefs and social practices of the Mormons that aroused fierce antagonism in the "Gentiles," no one will deny, but it is also cer-

tain that those who know the Mormons the most intimately criticise them the least. Hence I make no attempt to pass judgment upon any of the literature provoked by the Mormon element of Arizona life. Joaquin Miller always regretted, in his later years, the publication of his drama, *The Danites,* for he felt that it gave to the masses of the people of the United States *a general* idea of the Mormons that was false. Owen Wister, hearing a picturesque yarn of Mormons "holding up" and robbing a United States army paymaster, in the Gila Valley, wrote a powerful and strong story entitled *A Pilgrim on the Gila.* There are those who claim to this day that the story is pure history, thinly disguised as to names, though the Mormons naturally resent this with emphasis. Anyhow, the present junior United States Senator from Arizona, Marcus A. Smith, considered himself so personally aggrieved by this story that he made it the basis of a libel suit he instituted in the Courts. I think, however, the suit was quashed before it came to trial.

The peculiar character of some of the early day preachers who wandered into Arizona has formed the theme for many a story, and James Cabell Brown's *Calabasas* contains the sermon *said* to have been preached by a swindling itinerant and impostor who came to that almost deserted camp in the early days.

That most popular of our-day novelists, Harold Bell Wright, came into Arizona several years ago and immediately fell under its spell. Here, in the wide spaces and in the primitive life of the cowboy, he found material for novels that grip the heart and stir the soul to higher endeavor. In Tucson he wrote that sweet and tender book of reminiscences, *Their Yesterdays*, and while *The Eyes of the World* was written in California, on

the desert, it was in the deserts of Arizona that its inception, and much of its detail, was thought out. Out with the cowboys, riding range and rodeo with them, taking his place with the rest in the actual duties of herding, roping, cutting out and branding, he came to know and understand the cowboy as not one author in a million has even tried to know him. The result is — and I speak from a similar intimate and personal knowledge — his *When a Man's a Man* is as true a picture of cowboy life, surroundings, work, and influence as if it were mentally and morally photographic as well as physically. Every student of Arizona literature should read this book with what I have said clearly fixed in mind.

Rex E. Beach saw in the Arizona mule drivers a great theme for his peculiar kind of story-telling genius, so he conceived and wrote "The Mule Driver and the Garrulous Mule," which might even make a mule laugh, its humorous foolishness so readily gets under the thickest skin. It appeared in *McClure's* and contains the following "gem of purest ray serene": "Arizona may be slow in the matter of standing collars and rag-time, but she leads the world in profanity." That this used to be the case I do not propose to argue. Anyhow, if there is any objection to be taken to Mr. Beach's statement, let Arizonans do it and fight it through to the bitter end. The author may have some strong cards on that subject hidden up his sleeve.

Of the wonderful natural features of Arizona more has been written, even in late years, than any book can merely recount. The Grand Canyon has provoked books of description, novels and stories. The Petrified Forest, Sunset Crater, Meteorite Mountain, the Lava Fields, have all been profitable sources of inspiration, and Kirk Munroe wrote an interesting novel on *The Painted Des-*

ert. Unfortunately, he did not care to make his book basically accurate as far as his descriptions were concerned, and thus has materially helped give to the growing youth of the land unnecessarily false conceptions of the Painted Desert, the Hopi Indians, the Cliff-Dwellings, and the Grand Canyon, which his genius has woven into a very readable story.

The reptilian life of Arizona — its rattlesnakes and Gila monsters — have formed the theme of many a story, none, however, more interesting, though devoid of thrilling characteristics, than Adeline Knapp's "Beast," which appeared in *McClure's.* It is the story of a tame Gila monster, and is written with a keen appreciation of the country and also of the creature itself. I have quoted in another chapter somewhat from this article.

Most of the writers I have referred to above have been outsiders who have been, at one time or another, visitors to Arizona. But there are those resident in the State whose literary reputation has reached far beyond its borders. Miss Hall's work already has been characterized. Another excellent writer, whose work is found in many magazines, is Etta Gifford Young, who has both the gift of insight and of poetic expression. Will H. Robinson is another Arizona writer who is making good. He wrote an excellent story for children entitled *The Golden Palace of Neverland* that brought him instant fame. It is a worthy companion to *Alice in Wonderland,* and were it better known I am sure there would be a great demand for it. He also writes many short stories for the popular magazines, and a year or so ago a rather striking novel of his, entitled *The Man from Yesterday,* was published by an eastern firm. The story deals with the development of Phœnix and the Salt River Valley, and is a strong, vigorous and virile presentation

of some of the problems the settlers had to contend with. Of course there is a charming love story that lightens the more serious pages of the book.

Another of these home writers is Miss Rose Trumbull, of Scottsdale, and here is one of her characteristic poems:

THE DESERT

"I hear the city's surge and roar
Where tides of nations meet,
And as I look with jaded eyes
Across the crowded street,
I dream of far off desert wastes
Where Solitude had birth,
And where, untamed of human hands,
There lies the virgin earth.

"'Tis there that, furrowed like the sea
The desert stretches wide;
There, shrivelled by unnumbered suns,
A thirsting land has died;
'Tis there upon the azure hills,
Above the dusky dunes,
The rubric of the sunset lies
In rose and silver runes.

"There sing the fleckered mocking birds—
The minstrels of the night;
There timid quail brood o'er their nests
In undisturbed delight;
There dawn-winds sweep the somber plain,
And call the morning star,
But I have wandered many a day—
How far, my Heart, how far!"

One of the most interesting episodes in Arizona literature occurred when Frank Holme, a Chicago newspaperman, cursed with the overwork and destructive forces of our civilization, fled for refuge to the land of sunshine, health and recuperation. He first went to South Carolina, then came to Phœnix. In one of his

festive moods he and his friends established *The Bandar Log Press.* Their productions were unique. The illustrations were cut with an ordinary penknife out of poplar lumber, and the press work was so consistently abominable as to fill collectors and bibliophiles with glee. The result was a great demand for everything they issued. In due time several others joined Holme, all in a more or less impecunious condition, and Kirk La Shelle urged that the press be incorporated, in order that help might be given without its wearing the appearance of charity. One hundred and two shares were sold, each one gladly taken by one of the leading literary lights of the country, among whom may be found such names as that of Mark Twain, George Ade, Elbert Hubbard, Dunne (Dooley), Lyman J. Gage, J. T. McCutcheon, Richard Harding Davis, Booth Tarkington, etc.

The original plan of the press was to issue four books a year, but this was never carried out. One of the volumes was by Will H. Robinson,— referred to above — entitled *Her Navaho Lover.* Special black-faced type was used, and bold decorations adapted from the striking designs of Navaho blankets form the title-page. The illustrations were cut from wood blocks with a jackknife.

Unfortunately, death called Mr. Holme and cut short his hilarious plans and the Bandar Log's activities came to an end. It was an unforgetable event in Arizona literary history, and one that will ever be recalled with interest and pleasure.

While no one is more assured of the inadequacy and incompetency of this chapter to do more than give one a taste of the marvellous variety and charm of Arizona literature, I think I have given enough to whet my readers' appetites to know more. My friend, Dr. J. A.

Munk, of Los Angeles, for years has been accumulating all he can find on Arizona, and after amassing over seven thousand volumes, etc., Hector Alliot, Curator of the Southwest Museum of the same city — in whose care the books have been placed — has prepared a full catalogue. It is a remarkable bibliography, and far more than anything that can be said, demonstrates the proposition with which I started out in this chapter.

All that was said in the beginning of this chapter upon the influence exercised by Arizona's wonders upon the writer apply equally well to the artist with brush and pencil. Here is the land of marvellous forms in mountain, canyon, peak, wall and strata, and as for color! it is the palette board of the world. Thomas Moran came and saw its Grand Canyon and painted pictures that occupy honored positions in the Capitol building in Washington. Lundgren, Gardner Symons, Judson, Aiken, Sauerwin, Groll, Dow, Eitel, and a host of others, have succumbed to its charms. Harry Cassie Best, who, years before, had deemed the sunset glows on Mount Shasta incomparable, saw them on the San Francisco Mountains and other peaks of Arizona and surpassed himself in his colorful canvases. The color plate opposite this page is of one of his pictures. His brother, Arthur, dean of the Best Art School of San Francisco, has felt the same color allurement, both on plain, desert, mountain, canyon and Indian camp, and the spirited picture opposite page 148 is from his brush, showing the Apaches in their daring rides over the rocky slopes of the Arizona mountains.

J. Bond Francisco, the musician-artist of Los Angeles, whose canvases are prized in European galleries as well as in those of our own land, confesses to thrills of delight as he finds he can portray, with more or less fidelity and power, the glorious lights and shades, colors and

San Francisco Peaks at Sunset, from near Flagstaff, Arizona.

From a Painting especially made for this work by Harry Cassie Best.

tones that flood mountains, foothills and desert at certain times. Evelyn Almond Withrow meets the Indians, Hopis, Navahos, and others, and at once falls a victim, not to their warlike powers, but to their captivating qualities to the artistic eye, and the picture of the Hopi priest at his sunrise devotions on his Kiva overlooking the Painted Desert is a fine sample of the faithful power of her work. Mrs. J. W. Estill, of Tucson, a lover of flowers, came in contact with the desert flora of Arizona. The vivid and brilliant cactuses, with their wide gamut of colors and shades, so entranced her that she began to paint them. Her collection now is one of the most complete and remarkable in the country, and by her kind favor I am permitted to reproduce her painting of one of these brilliant though thorny and unfriendly specimens of desert growth.

These are but a few of the many illustrations that might be given of the attractive and beautiful pictures produced under Arizona's inspiration. Suffice it to say that I firmly believe that when artists realize that the conditions of life in Arizona today are conducive to the highest comfort, they will come into its borders in larger numbers to yield to its inspiring power; and, in addition, two or three more decades will see its native sons and daughters developing into masterly artists because of their loving desire to show forth the artistic glories, wonders and beauties of their native State.

CHAPTER XX

THE COWBOY EPOCH

No story of Arizona would be complete that omitted some details of the time when the cowboy was an important factor in the life of the country. He was a picturesque character,— far more picturesque in reality than in the short stories and movies where a fake presentment of him is given to an ill-observing and ignorant public. He was picturesque in clothing, in language, in manner, in life, and we owe him a debt of gratitude for many things, the least of which is the interest he has aroused in the minds of those who know him not at all.

To most people there is no difference between an Arizona cowboy and one from Texas, California, Nevada, or Montana. Yet there are many and "queer" differences, that, however, are very significant to those who understand them. The original cattle countries were Texas and California. From there, in Spanish days, there were reasonably ready shipments. Arizona, New Mexico, Nevada and the country further north were *inside* countries, and besides, they were cursed by warlike and hostile Indians who made cattle-keeping a dangerous and generally unprofitable occupation. So the marked differences between cowboys are found in the standards of Texans and Californians. The California cowboy uses a heavy saddle — averaging forty pounds in weight. He has several kinds of trees — the Stockton, Sacramento, Visalia, etc., this being the name given

to the wooden base upon which the leather is "built." The saddle is high, with broad tree, and stirrups so hung that one stands up, practically speaking. Tapaderos — flaps at bottom of the square wooden stirrups — reach nearly to the ground. A single cinch is used, the leather end of which is fastened to the cinch-ring in a slip-knot. The head-stall is often elaborately decorated with silver, and the bit is a heavy "spade," "wheel," or "ring," no one of which an eastern horseman would ever dream of putting into his horse's mouth. His "lariat"— Spanish *la riata* — is made of braided rawhide or calfskin worked in the fingers until it is soft, smooth and pliable as moleskin, and the noose is made so that it slips with lightning-like rapidity, and can be tightened or loosened with equal facility.

On the contrary, the Texan outfit has a long, low-cantled, broad-horned saddle, loosely strapped to his pony with a double cinch, with buckles on the "latigo" straps. His bit is light, and generously reinforced with a "hack-amore," and this rope is either of "hemp" or Mexican grass. Tapaderos are never worn, and the stirrups are pulled up so that the Texan rides Apache Indian fashion, with knees bent.

The Arizonan, however, is influenced somewhat by both. He may have a Visalia-treed California saddle, and yet have some Texan characteristics. His rope is often a "lass,"— corruption of lasso — and he is a "cow-puncher," rather than a cowboy, and one may ride Texas fashion and another Californian, for this being the meeting-ground, both styles prevail and are acceptable.

It will be apparent to every reader that the cowboys' occupation depended upon the open range. Cattle, horses, were turned loose to graze on an unfenced area that reached from the Equator to the Arctic circle, and

from the Pacific Ocean to the Missouri River. Cattle were at liberty to roam wherever they willed. There were few fenced areas, and those were near to towns or smaller settlements where the pioneers made their homes, and where the later cities came into being. Every animal must be marked so that it could be distinguished at a distance, or many weary hours of hard riding would be wasted in running after cattle to find out that they belonged to some one else. Hence the system of branding, slitting the ears, cutting the dewlap, etc. As a rule where cattle found fair feed and water they did not wander far from their native range, but this might cover an area of two or three hundred square miles, or less.

In the early days every cattleman was a law unto himself, when the law of the range winked at the stealing of all the calves a man could get his branding-irons on, and the round-up was unknown. There was much duplication of work, and much dissatisfaction which often manifested itself in deadly feuds between rival camps. Those days have been displaced by the new era of cooperation. The cattlemen now form stock associations, which hold regular meetings for the discussion of all affairs pertaining to their business. This association sets the time for the spring and fall round-ups, elects the man who shall be the boss, hires the cook, and provides all the necessary supplies. The boss' word is law, and he allots every puncher the work he shall do, sees that he does it, and is supposed to watch out for the interests of all cattlemen alike, in accordance with the cattle laws of the State and of the association.

It was at one of these round-ups that I had my first introduction to the western cowboy who, ever since, has had a high place in my regard. Charles B. Clark, Jr., has written a song which cowboys often sing which

pretty fairly portrays the round-up, its work, spirit, and play:

"Come, strap up your chaps and your big spurs, too,
And wrangle your horses as though you're through,
Better catch up a dozen for one won't do,
For we're starting today for the round-up.
Wah! the round-up!

There'll be Shorty and Frenchy and Bacon Rind Joe,
And a rough-ridin' outfit from Seven XO,
There'll be steaks that is juicy and beans that is rich,
There'll be steers that is ugly and horses that pitch,
There'll be yelling and hootin' and maybe some shootin'!
And plenty of fun at the round-up.

"We must crawl from our traps at the breakin' of morn,
And we spend the whole day between cattle and horn.
Over hills and up gulches with never a rest,
Till the day flickers out on the hills of the West,
There is lopin' and ropin' and no time for mopin';
It's work for good men on the round-up.

"There is noise on the mountains and dust on the plains,
And the cattle string out of the dry, sandy drains,
While the far-scattered punchers are urgin' them in,
With words that smell strong of original sin,
With a racin' and chasin' and often 'bout facin',
And that is the edge of the round-up.

"A cavortin' and snortin' of horses gone wrong,
With a hailstorm of cuss words, a sprinkle of song,
And a bawlin' of calves that don't want to but must
And a smell of burnt hair and a swirlin' of dust,
And a rattle of battle 'mongst long-horned cattle,
And that is the heart of the round-up.
Wow! the round-up!

"And when it is over the whole blamed force
Draws liquified joy from its nearest source,
Then there's happiness, fights and, at last, remorse;
That's mostly the end of a round-up."

The time and place of the rodeo decided upon, all hands

wend their way thither, preceded, however, by the grub-wagon, which, of course, must be on hand to provide for the needs of the men. Each man brings his own "string" of cow-ponies for his individual use, as one day's riding is enough to wear out any but the toughest of animals. Every horse must have several days to recuperate ere he can be ridden again. These "strings" are put together into one large herd, which, in Western parlance, is called the "cavviyard," which is from the Spanish *caballada,* the horse herd. The man who has charge of this herd is called the horse "wrangler."

One by one, or in small groups, the cowboys assemble. It is a regular "gathering of the clans." "Hello, Buck!" "Hello, Frank!" "Hello, Pieface!" "Well, you old son of a gun, blam-jam you, I'm glad to see you!" and the like, are salutations that one may hear.

Cookie is at work with his pots, pans, and kettles over his campfire, singing a lugubrious song about "his girl going away with Roarin' Sam, leavin' him behind like an innocent lamb. She's been gone, by gosh, two weeks and a day, and he's left behind singin' this melancholy lay," or something that sounds much like it. Again his voice will rise in historic vein and we learn in forty verses or more the story of Sam Bass, the noted desperado who was born in "Indianner." In the meantime the bread in the dutch-oven is "humpin' itself," the beans are "sizzling," the potatoes are near to "bilin' themselves to pieces," the beef is nearly roasted to a turn.

As each contingent arrives, the extra ponies are turned over to the wrangler, saddles are taken off, packs removed, the cowboys get busy with a bar of soap and the tin wash-basin, and before they are "slicked up" Cookie's call rings out: "Grub pile, grub pile. Take it awa-a-a-y!" Like an avalanche, the boys fall upon the

grub, which is dished up with little ceremony in tin plates. There is no table, and no pretense of one. Each puncher sits where he likes, takes up as much room as he wants, and puts his plate on his knees or the ground. He keeps his hat on, as at any other place it would be liable to be stepped on, or made the receptacle for surplus beans or coffee. Rude humor, rough jests, often punctuate the progress of the meal. There are but two courses, the grub itself; meat, generally beef, *frijoles* — beans — potatoes, and the dessert, which is a harmless mixture of rice and raisins commonly designated as "moonshine."

Sometimes the first evening, if the rodeo opens near a settlement where there are girls and a schoolhouse, is given over to a dance. It puts the punchers in a good humor, though the first day's work suffers from the mild dissipation of late hours and too much fun. The morning, however, sees them arise as the alarm clock or Cookie's first call awakens them, and each one steals out into the early dawn, saddles his one pony kept up over night for this purpose, and ride out to hunt for the horse-herd. When these are gathered up and brought in breakfast is taken without ceremony, after which the horses needed for the day's work are "roped," brought in and saddled. Some time on this first day a few of the horses which may have been allowed to run wild on the range are full of life and fire, and fun is anticipated during the "unroostering" process. Some like to run if they are strong enough to overcome the pull on the bit, others hang their heads and begin a series of jumps, sidesteps, whirls, and prances that would dazzle the eyes of a couple of modern dancers. Now and again a sudden stroke of the "quirt" reminds an apparently sober, gentle horse, that is moving along as demurely as a schoolgirl, that there is a streak of innate deviltry within his system

that desires to exhibit itself, and without any preliminaries he goes up into the air like a rubber ball, his four feet brought together, his back arched like that of a spitting cat, and, with his head between his knees comes down with a jolt that would force the spine of any ordinary man clear through to the topmost crust of his skull. Everybody howls and yells when anything like this occurs, and does all he reasonably and legitimately can to increase the fun — which simply means, to an onlooker, exciting the horse, disconcerting the rider, and seeking to bring about a dire disaster. But the rider generally takes it all as a matter of course, sits his horse like a bronze statue, as straight and graceful as can be, at the same time using his quirt or raking the bucking animal fore and aft with his heavy Mexican spurs.

Thus the punchers ride out to the appointed rendezvous. Here the boss meets them and "mixes the medicine." The plan for the day's work is unfolded, and each rider, or, generally, couple of riders, is given a route, each route converging in the allotted meeting-place where the cattle will be "rounded up," calves branded, and everything else done that is required. Look at the "boys" as they sit their ponies, awaiting orders. They look like a band of "rangers" or "scouts," in their chaps, high-topped boots, spurs, broad-brimmed sombreros, and with red, blue, green, or yellow bandanas or silk handkerchiefs around their necks. Their names are as picturesque as their appearance. Here is an actual roster: Frenchy Franklin, Boss; "One-Eyed" Pete, "Punch-bellied" Jake, "Razor-faced" Bill, "Tex" Armstrong, "Bony" Waters, "Bully" Johnson, "Possum" Rawlings, "Two-bits" Bates, "Shamrock" McGinnis, "Goat" Smith, "Kid," "Slush," and "Nigger" Jim. Orders received, off they go, each in the direction indicated, all, however,

to so ride that they will arrive at the given rendezvous at the appointed hour. Sometimes the allotment is an easy one, sometimes hard, sometimes dangerous, but whatever it is each pair of punchers "goes to it" with a will. For all must work together, forming a regular cordon through which none of the animals wanted must be allowed to escape. I have ridden at the extreme end of the fan, making a circle in the day of sixty to seventy miles, sometimes chasing refractory cows at a terrific speed, up hill and down, reckless alike of stumps, sage-brush, rabbit-holes, rocks or boulders. If one who sees a heavy cow or bull in a corral or stable thinks that he is looking upon a clumsy creature that cannot run, he should have a few days out on an Arizona cattle-range and he will soon change his mind. There is no stopping a well-trained cow-pony when he once gets started after running stock, and he knows a tenderfoot is upon his back. He goes ahead and attends strictly to his business, heading off the creatures and forcing them in the direction required. As a rule the tenderfoot is willing to allow the pony to take his own way, for he finds it all he can do to keep his seat in the exciting, dashing, bumping, jumping, whirling that he undergoes. But my, how stimulating it is! How it starts the blood to flowing, the lungs to fullest action, the liver to activity, the stomach to doing its work. There is no exercise so thoroughly "all-over-ish" as this kind of horse-riding. Every part of one's physical being, inside and out, is brought into full play, and he is on his sure road to actual death who can take such exercise for a few days and not feel that he is becoming a new man as its natural outcome.

Once started there is no time to stop for lunch, rest, or drink. Through the fierce heat of the day, the rain, the storm, the fog — whatever the weather may be, the ride

persists, until in the early or late afternoon the meeting of all of the scattered cowboys takes place. Sometimes a rider will come upon one or a small band of wild cows that have been branded, but are now wilder than ever. If they have calves with them it is often a difficult matter to ride them down, and sometimes, when they are cornered, they are dangerous. Here is a little of the extra spice of life that adds zest to the day's work. As the rendezvous is reached each couple brings in ten, twenty, twenty-five, more or less, according to his "luck," of cattle and unbranded calves. A fire is soon built, and every cattle-owner's branding irons are placed therein to get hot. The boss selects a skilful "roper" to ride in among the herd to "rope out" the calves. Another puncher is appointed to keep tab on the calves branded, while five or six others are appointed to "bulldog" the poor little creatures, as, bawling, struggling, jumping, they are "snaked" out into the open. Here five or six punchers "bulldog" the calf and get it down, while another one brings the red-hot iron and applies it.

But, the tenderfoot asks, how do the cowboys know what brand to put upon the calf? This question is explained — when one understands the fact — by the peculiar shouts of the cowboy who drags out the calf. He generally finds it with its mother. As soon as his rope falls upon the little creature he calls out "Bar X," "Diamond Arrow," "Bar Lo," "D K," "Turkey Track," or the well-known name by which every brand generally found on the range is designated. The boss stands by the fire, sees that the proper brand is given and no sooner does the smoke of the burning hair and flesh ascend to the heavens than it is known that another candidate for initiation into the honorable ranks of Cowdom

has been duly received. During this time the balance of the cowboys are " riding herd "— that is, circling around the herd, keeping the animals well pressed together. Sometimes the herd tries to stampede or a cow or calf breaks loose, giving the rider nearest to it a swift chase to run it back.

The scene is one that is exciting beyond measure to one who sees it not only for the first time, but at any time. The lowing cows, the bawling calves, smoking irons, odor of burning hair, running of horses, whirling of riatas, yelling and shouting of cowboys, ascending dust, beating of racing horses' hoofs, all create an apparent pandemonium that gives it a peculiar fascination.

When the branding is over, another equally important process begins. This is the " cutting " of the herd. Some of the cattle and the calves are to be left on the range. These are " cut out " and turned loose as soon as possible. Others have wandered from their own ranges and are to be driven back. These are generally kept with the animals that are to be shipped, or those that are to be pastured in the mountains for the summer season, until the whole rodeo is completed, and then they are disposed of with all others belonging to the same class. In the " cutting out " there is often considerable excitement. Two or three punchers ride into the herd, spot the animal that is to be cut out, work her gently toward the outer edge of the herd, then, by a sudden dash of their ponies, scare her out. This requires manœuvring, quick decision, rapid action and skilful horsemanship. Now and then a cow refuses to leave the herd. A rope around her neck, twisted around the horn of the saddle of a cowboy that steadily moves away from the herd, soon persuades her that her place is outside, though this often leads to others attempting to follow her, for in cow society, as human

society, ties are formed which the powers that be ruthlessly refuse to recognize.

This done, the fire is trampled out and the ashes scattered, the herd rounded up and driven to camp, where the cattle are turned over to the tender mercies of the "night herders." Then, without parley, ceremony, instructions or suggestions, every cowboy races to the chuck-wagon, throws himself from his horse, flings his lines over the horse's head upon the ground, and makes a dive for the "tools." The original and first cafeteria was a round-up grub-wagon. The door to the chuck-box is put down and fastened as a table. On it are tin-plates, knives, forks, spoons, and tin cup. Every puncher grabs his own, makes the round of the pots at the fire and helps himself. Then, seating themselves on the ground, they "go for it," for of all the appetite-provoking exercises nothing in the world surpasses riding after cattle. And, as I have said, it is seldom any preparation is made for a noon meal for the active riders, so that when night comes they are simply ravenous. The meal over, "plugs" are taken out for a chew, "the makin's" are passed from hand to hand, cigarettes rolled and lighted, and then, stretched out upon their backs, or in any position comfort suggests, the cowboys chat, joke, laugh, sing, tell stories so long as they desire.

Once in a while into such fun Cookie will interject a complaint that some low-down, ill-bred puncher has been guilty of leaving his dirty plate on the chuck-table instead of putting it into the "round-up" pan. This is always a signal for a bit of genuine rough-housing. Some one is always found guilty, tried and condemned. The punishment is generally that the culprit be "chapped." Accordingly, he is seized by the not too gentle hands of the punchers, stretched across the water barrel face down-

wards, and held there, while Cookie proceeds to administer with a pair of leather "chaps," the number of strokes named upon the posterior anatomy of the victim.

This over, the punchers, one by one, are ready to unroll their blankets, some to creep into them at once, others to sit and smoke a while longer, while perhaps from a solitary singer will be heard the song:

"I thought one winter, just for fun—
After cow-punching was all done—
I'd rest my bronc' and rest my gun
And hunt me up a girl.
I'd corral her everything that goes;
I'd take her to all the shows;
I'd cut out all her other beaus,
And she should be my pearl."

Then, perhaps, silence. Or, mayhap, from another singer, as a kind of a refrain, or chorus to his song, one may hear among the snores of the cowboys already asleep:

"Says the boss to the cowboy:
'You never can tell;
Sometimes they're angels,
Sometimes they're —.'"

Of the speech of the cowboys one might write pages. How often have I listened and wished I could faithfully reproduce their picturesque language! It is full of strange, exaggerated, peculiar illustrations, comparisons, similes. Imagine a man being described as "a sidewinder, and a diamond-back, and a black rattlesnake all rolled into one." A careless driver was thus pictured: "Him drive hosses? Why, he don't know nothin' about driving. He just ties four or six hosses hit or miss to his waggin, and then *herds 'em* across the kentry." The desert is said to be "hotter'n hell with the blower on," and the place where "you had to prime yourself to spit."

Who could express a dry spell better than: "It hadn't rained since Noah," or "I'd forgot what water looked like outside of a pail or a trough." Who that ever curried a mean horse wouldn't understand a mean man describing himself as "never been curried below the knees." "Whar you makin' for?" is a question that some might not realize simply means "What is your objective point?" and only a resident in a cattle country, as a rule, knows that "cow" means anything from a suckling calf up to a venerable old bull. The "grub-wagon" is the portable kitchen of the cowboys, for, of course, they must be provided with regular meals, so that as their day's work ends they do not have to ride back to eat — the "grub" or "chuck" wagon has gone ahead, settled where they are going to camp for the night, and the meal is ready practically as soon as the cowboys are.

"Bedground" is the place where the cattle are held for the night, and men ride "day herd" and "night herd." A "dogie" is a yearling that has lost its mother when very young and has had a hard time living through the winter. When a herd starts to stampede the boys try to swerve the leaders so that by and by the herd is running in a circle. This is "milling." The cry "Roll out! Roll out! Chuck away!" is the morning call for breakfast. Again it is "Chuck pile! Chuck pile! Put it away!" But I find that each cook has his own call, and that it makes very little real difference what it is, for every cowboy soon knows and readily responds to it.

How terms come into existence is sometimes hard to tell. Whims and notions often control us. But there need be no difficulty in at least guessing what "unroostering" a horse means. When a cow-pony has been roaming loose on the range for a whole winter he sometimes comes back to civilization and to work feeling extra

good, and then he must be " unroostered," in other words, tamed down to the steady work he has been used to. This is different from " breaking him." Only an untamed horse is " broken." A horse may be ten or fifteen years old and yet have a fit of coltishness after being unused for a time, and then he must be " unroostered."

Does it need half an hour's explanation to account for the expression " clawing leather," when one knows it refers to the antics of a rider whose horse had begun to " buck." Scores of people who use this term " buck " do not know that it undoubtedly comes from the apparent bunching of the deer's four-feet together as it bounds down hill in its frantic efforts to escape, when being followed or shot at.

" Mix the medicine " is a phrase that has an Indian origin. Medicine to the Indian is any procedure that procures the results he desires, whether in disease, war, love, hunting, fishing, or farming. The " boss " desires to secure all the stock and unbranded calves on the range. He knows that certain men ride better in some places, and under certain conditions than others; some are more careful and particular in dangerous, or difficult places; others will hunt where cows are likely to hide, while still others do not mind long rides so that they may be in the open and free from hard runs through forest trees, or up and down mountain slopes. The " boss," therefore, takes these things, the nature of the country, the habits of the cattle he is after, etc., into consideration and " mixes the medicine," to secure results.

When calves are to be branded, they are " roped " and then " cut " from the herd, out into an open space, where the branding-irons are in the fire being kept ready for branding. Several cow-punchers are ready to seize the calves and " bull-dog " them for branding. This term

implies that they are grabbed with bull-dog hold, by the ear, the leg, the tail, anywhere, thrown down, and held down while the brander " claps on the iron," sears the hair and the outer skin and thus completes the process of branding.

A HOME IN TUCSON, ARIZONA.

CHAPTER XXI

OLD — TUCSON — NEW

PAGEANTS are the order of the day. Look at those that come before my mind and eye as I hear the name *Tucson*. Indians, of the peaceful, quiet kind, in their stick-cactus and mud huts, busy making pottery, basketry, out farming, dressing skins, gathering grass seeds, hunting, dancing. Now solemnly marching into the scene come black-gowned Jesuit priests, led by Eusebius Kino, mathematician, scholar, professor and now zealous missionary. Lifting the symbol of his religion high in the air he preaches with fervor and conviction the religion of cross and church that possesses his heart. His very impetuosity wins the regard of the simple listeners though they but vaguely understand what he says to them. See them as he baptizes them and their children, uttering words in sonorous tones and making movements with his fingers dipped in water that the recipients of his ministrations regard as deepest mysteries. Watch them as, under the padres' direction, they make adobe bricks, lay the foundations, and build the first adobe churches seen in Arizona. Listen to them, when the building is completed, learning to sing, to recite the creed, make the responses. Then thrill as you see the sudden onslaught of fierce Apaches, the hated foes of the pastoral Pimas and Papagoes. The bow-strings twang, the arrows fly, the obsidian- and flint-tipped lance speeds on its swift errand of murder, and the torch fires the house, the church

and the fields of waving grain. Devastation, destruction, desolation, reign for a while. Then with new courage homes and churches are rebuilt, fields resown, hope and happiness renewed. Spaniards and Mexicans come, ranches are started where cattle and sheep are raised and mines are opened and Indians are taught to work in them; horses and sheep are introduced and the Pimas learn to ride and to weave.

Now and again lurid flames and midnight attacks of Apaches make a horrid contrast to the general quiet and pastoral content of the lives of Spaniards and Indians. So forts are built. Tubac comes into existence, and Captain Juan Bautista de Anza appears on the scene. He goes to look for a road to connect the Missions of Sonora with those of California. Then he is told to go gather up the colonists required to start a new city by the Golden Gate, just discovered by Portolá's soldiers. We see them — men, women and children — come up to Tubac from Sonora. Their horses, mules, burros, cattle and sheep are gathered together also, for a paternal government does not intend they shall go into the new land with necessities unprovided. See the long caravan as it leaves the little settlement and presidio on the banks of the Santa Cruz, slowly wending its way towards Tucson. Listen to the morning and evening exhortations of Padre Pedro Font, the Franciscan friar who gave us the outlines from which we can paint in vivid colors this part of our pageant. See the expedition as it camps at night, awakens and quickens into life each morning. It reaches, it stops a while, it passes Tucson, and goes on to make history for San Francisco — one of the great plays staged upon the boards at Tucson for the immediate entertainment of but a few, and now resuscitated for our delectation.

Now Padre Francisco Garcés comes to San Xavier del Bac, and we see him go out, once, twice, thrice, four, five times on his *Entradas* to western and northern Arizona and into California. We see him as he comes back, with stories of the many and strange tribes he has seen, even the far-away Hopi of the north and the Havasupai in their deep and beautiful Cataract Canyon home. Then the news comes to us that discontented and vengeful Yumas have slain him and his companion padres, as well as Governor Rivera, yonder at the new and unfortunate Missions on the Colorado River — and he fades from our sight.

Years lapse; the padres of the Mission churches are recalled because the order of secularization has gone into effect, and the Missions begin to decay. Then there comes an entirely new element into the scene. The gringo soldier appears, American army-posts are established. The prospector for gold, the miner, the trader, the long ox- and mule-teams, the prairie-schooners, the commissary wagons begin to appear. A new town springs into being. The Tucson of Spain, Mexico, California and Texas commingles to make the leading frontier town of the lower Southwest. Gamblers come in, with saloon-keepers, and the pathetic women of their feather. The epoch of the "Wild and Woolly West" begins, and a man is served up for breakfast every morning. Then there is the flutter of the Civil War; more uprisings and bloody butcheries of the Apaches, and the appearance of General Crook. Companies of soldiers come to Fort Lowell, and march through the streets of Tucson, who look as if they mean business; their commanders do, and they soon learn that that is what they are there for. The newspaper has already come. A printing office has been in operation in Tubac for years.

There is one in Tucson. It tells the news — in simple and primitive fashion, yet it brings before us the men of the day seated in the saloons and gambling houses reading their papers as men have done ever since.

Now the scenes change with greater rapidity. The Apaches are tamed; the railroad comes in; more citizens with their wives and children come; the city grows; the residences increase; water works, sewerage, schools, churches, cathedral, university, stores and factories, street-cars come into existence. Saloons and gambling dens fade away — banks loom up more vividly and prosperity reigns supreme. The present appears before us — the pageant of the past fades and we are living in the active now, in a modern city of from twenty to twenty-five thousand population.

Hence it is no fiction or exaggeration to say that Old Madrid is not more fascinating, romantic and dream-inspiring than Old Tucson. Yet no transcontinental traveler alighting from the Southern Pacific trains would think it, as he sees the modern hotels, automobiles, and other evidences of the new Tucson. Nevertheless it is within the memory of those who do not yet regard themselves as old men that Tucson was the wildest, most uncombed, untamed, and reckless city on the frontier.

Bourke tells in his inimitable way the story of early day Tucson that fully confirms my statements, where a drunken Texan, Waco Bill, cries out for Duffield, a well-known dead shot of Tucson. In the scrimmage that ensued Waco Bill received a bullet in the groin and Duffield stood over him with a Chesterfieldian bow and wave of the hand, exclaiming: "My name's Duffield, sir, and *them's* mee visitin' cyard!" The introduction seemed most effective, and in due time Waco Bill wafted out of sight. There was a man for breakfast — if not every

morning, at least often enough to satisfy the most exacting. Strange to say, there were no hotels. The floating population either actually made their residence in the gambling halls or saloons, eating wherever they chose, or had a chance, or they slept in their blankets in some hospitable corral, rolling the bed-clothes up during the day and storing them with the accommodating stable man.

The saloons and gambling houses of the place were many and never closed, day or night, weekday or Sunday, for birth or funeral. There were the "Quartz Rock," the "Hanging Wall," the "Golden West," "Congress Hall," and "Fashion," and places of lesser note and fame, and many are the stories that might be told of drinking bouts and gambling games that to this day have not lost the thrill of their recital. All nationalities were represented, and practically all conditions of life, exactly as was found in San Francisco in its "days of old and days of gold." As a rule, the best of order prevailed, though once in a while a sheep-herder, prospector, cowboy or miner would create a little excitement, when made too exuberant by an extra dose of "sheep-herder's delight."

Occasionally the *teatro* saw the presence of a traveling company of barn-stormers who had been allured by the prospect of reaping a rich harvest from the generous pioneers, and among the Mexicans the *maromas*, or acrobats and tight-rope walkers were as popular as they were accomplished.

Often there were cock-fights, which were exciting and bloody, as famous roosters were brought up from the South and pitted against each other, but the bull-fight, with all its horrors, was unknown. The great excitement and never-failing recreation was the *baile* — the Spanish or Mexican "ball," and to this all nationalities crowded. What the ball-room lost in equipment and

splendor it made up in the enthusiasm of its company. The ladies were there — young and old, fat and thin, blonde and brunette, serious and smiling,— and they attracted the cavaliers, who were an equally varied assortment; there was a good-enough dancing floor and music — so what more did one want?

The population was cosmopolitan beyond compare. Every nationality was represented, and many hybrids, some indigeneous and others imported, for in those days peculiar alliances were far from uncommon, and Chinamen and Indian women, negro females and German men, and every conceivable combination of sex-relationship seemed to turn up at some time or another in Fate's Wheel.

Everybody smoked, either cigars, cigarettes, or pipes, and the weed varied from the finest Havana leaf to the vilest skunk-cabbage used as a substitute by some impecunious Mexican or besotted Indian. Everybody drank and the liqueurs and mixtures ranged from genuine tarantula juice, coffin varnish, or liquid lightning, to brands of rarest liquors or choicest vintages. Everybody gambled, either in the flaming gambling dens or in the quieter rooms of private residences set apart for this purpose. When I use the word *everybody* in these connections, it does not imply there were no exceptions. There were a few — just enough to prove the rule. This was in the 'fifties, 'sixties, and 'seventies.

The very first building used as a hotel in Tucson is still standing. It is a quaint old building, two stories high, of adobe, with flat roof, and a large inner court or *patio*. When built, in 1859, it was but one story high, and was known as the Phillips House, from its builder. It had a wall up to and connecting with the stockade of Fort Lowell, where the soldiers were stationed to protect the

THE ORNDORFF, THE OLDEST HOTEL IN TUCSON, ARIZONA.

citizens and settlers from the raids of the Apaches. The southwest corner stands on ground that was embraced by an older wall which surrounded Tucson when it was a walled city. Many notables have made this their headquarters when in Tucson, such as Governor Frémont, General Miles, Buffalo Bill, etc. In the course of time it was enlarged, and another story built on. Then its name was changed to the " Cosmopolitan," later to the " Santa Cruz," and finally to the Orndorff.

It is still used as a hotel and is under the management of F. J. Wharton, the editor of the *Tucson Signal,* a weekly paper devoted to reform movements and the general welfare of the city.

To go back for a little while to Tucson's earlier history. It was on the 10th of March, 1856, that the Gadsden Purchase was made effective, and all the Mexican authorities and troops evacuated the place.

Prior to that time it had been a somewhat sleepy Mexican pueblo, occasionally stirred by some great event, or a raid by the Apaches. The place doubtless began as the home of Indians from whom we get its name — not from the Spaniards, as so many people imagine. Dr. Merrill B. Freeman — than whom none has studied the subject more thoroughly — affirms that the presidio was established by the Mexican Government in 1776, with about fifty soldiers brought up from Tubac, for the purpose of affording protection to the near-by mission of San Xavier del Bac.

The name Tucson comes from the Papago word *Styook Zone,* the name of a small pueblo or Indian village located on the foot of the hill known as Sentinel Peak, just across the Santa Cruz River, and where the students of the University of Arizona now have their big symbol A. *Styook* signifies " black," and refers to the vol-

canic rock of which the hill is composed, and *Zone* is the "foot of." Hence it is assumed that it was the name of the village and under the modifying tongue of the Spaniards became Tucson, they having no equivalent for our English "z," which the Papagoes seem to have been able to pronounce.

In the chapter on Nogales and Santa Cruz County will be found full reference to the coming of the Spanish padres into this region. Fray Eusebius Kino, the missionary Jesuit, was the most noted of them all, and to him we owe the founding of the Mission of San Xavier del Bac, nine miles south of Tucson, in 1700. He had also founded Missions at several places further south in the Santa Cruz Valley, notably at Tumacacori, Guevavi and Calabasas. The small churches erected at these places were all partially destroyed by an uprising of the Pimas, but missionary work was again resumed in due time.

In 1702 Kino made his last missionary trip to the Gila and Colorado River country. This was, possibly, the last time he crossed the Arizona line. In 1711 he passed away and for twenty years the work he had so enthusiastically started seemed to lag.

In 1731 a small band of Jesuits came into Arizona and Fray Felipe Segesser took charge of San Xavier, and Juan Bautista Grashoffer of San Miguel at Guevavi. Then in 1750 occurred the second revolt of the Pimas in which priests and colonists were killed. San Xavier and San Miguel Guevavi were plundered and abandoned but the two Jesuit priests escaped. Two years later peace was made and the presidio of Tubac established. In 1754 the Missions were reoccupied.

Tucson was a rancheria and a *visita* of San Xavier del Bac at this time, and a few Spanish settlers seem to have lived here, but in 1763 it was abandoned by all except a

few sick and infirm Indians. In 1767 came the order that expelled the Jesuits from the domains of the king of Spain and Fray Alonzo Espinosa was the Jesuit father affected by this order at San Xavier, while Rafael Diaz was at Guevavi. The Missions of lower Sonora were secularized and put in charge of regular parish priests, but those of Pimeria Alta and Baja were offered to the Franciscans, and 1768 marks the coming of the priests of this order into the region. Fray Francisco Garcés was placed in charge of San Xavier del Bac with the *visita* of San José de Tucson. Garcés was a true missionary apostle filled with the same kind of zeal as Kino and Serra, who was soon to found the California missions. But those of Arizona were found in bad condition. They had been plundered by Apaches and the Indians connected with them had been released from all control to their demoralization. Don José de Galvez, the special agent of the king of Spain to see that the Jesuits were removed and their Missions placed in other hands, found his hands full with a vast region to care for, so Arizona was neglected. In spite of this, however, Fray Garcés determined to start out on missionary visits to the pagan Indians within his reach. In August, 1768, he set forth from San Xavier, accompanied only by one Indian and four guides sent to meet and protect him, and visited the Papagoes and the tribes on the Gila River. On his return he suffered from an attack of apoplexy and Fray Gil from Guevavi came to his assistance. It was well for Gil that he did so, as during his absence the Apaches attacked Guevavi, sacked and destroyed the Mission and killed all the soldiers save two, whom they carried away with the avowed intention of torturing them to death.

In 1770 Garcés started off again and visited the Indians as far west as the Gila, and was so encouraged with the

reception accorded him that he strongly urged the establishment of new missions there. Though the recommendation was forwarded to Spain with emphatic endorsement nothing further came of it.

During the period of waiting, however, for a decision Garcés was sent out by his superiors on another reconnaissance. He visited the Yumas, of whom, among other things, he says:

"Only one awkward thing happened to me among them. In all places, and not only once, they offered me women, etc.; but I, fixing my eyes on the crucifix which I wore on my breast, and raising it up towards heaven, gave them to understand that in that particular I did not live as they did. On this account, they showed me much affection, and obtained a higher idea about a matter which to them appeared strange."

Fray Gil about this time was appointed *padre-presidente* of the Missions of Pimeria Alta and yet was required to found a Mission for the Seris. He bravely went and took up his abode with this warlike people on the island of Tiburon, in the Gulf of California, and after three months of hard and fruitless labor, met martyrdom on the 7th of March, 1773, at their hands.

In 1772 Fray Antonio Reyes, then a missionary of Sonora visiting in the City of Mexico, and later a bishop, made a report on the Missions of Pimeria Alta, from which we learn that the church of San Xavier del Bac was situated in a fertile plain, was sufficiently spacious, and the sacristy well supplied with altar vessels and ornaments, but in poor condition. About one hundred and seventy men, women and children lived there.

At the *visita* of San José del Tucson he estimated the population, Christian and pagan, at about two hundred. It had neither church nor dwelling for the missionary.

Los Santos Angeles de Guevavi was situated on an

arroyo in a fertile region, where a little farming was done by the Indians. The church and sacristy were well furnished with vestments of every color and with altar utensils. A total of eighty-six was noted as its population. There was neither church nor house for the missionary at the *visita* of Calabazas, though sixty-four people were to be ministered to. At San Ignacio de Sonoitac, east of Guevavi, there was a church and a house but both were devoid of furniture and ornaments. Ninety-four Indians lived here. Tumacacori, six leagues south of Guevavi, had a church and a priest's house, both empty, with a population of ninety-three.

As I have shown earlier in this chapter, the Mission of San Xavier del Bac was founded in 1700. All uncertainty as to the date is forever eliminated by Kino's own statements.[1] It had been known as a Papago and Pima Indian rancheria since the seventeenth century. During 1720 and 1767 the baptismal records show that the sacrament was administered to large numbers of Indians by twenty-two successive Jesuit priests. Fray Garcés was its most noted Franciscan priest, as Kino was its noted Jesuit founder. In 1768 it was destroyed by the Apaches but in 1772 the energy of Garcés had restored it, and its population was recorded as two hundred and seventy. The present church occupies the site of the older structure and bears the date over one of its doorways of 1797. This is assumed to be the time of its completion. It is said to have been started in 1783, when Fray Baltasar Carillo was in charge. His successor was Fray Narisco Gutierrez, who remained in charge until 1799, having as his assist-

[1] These, as I have shown elsewhere, are contained in Kino's letters, etc., which were recently discovered in Mexico by Professor Herbert Bolton, of the University of California, and are soon to be published by him, with illuminating introduction and explanatory notes.

ants Frays Mariano Bordoy, Ramon Lopez and Alonzo de Prado, hence to these men we undoubtedly owe the completion of this superior and impressive structure.

San Xavier remained without a resident priest for a long time, though it was ostensibly under the control of the Bishop of Sonora. In 1859 the territory of Arizona was attached to the diocese of Santa Fe, New Mexico. The bishop, the Rt. Rev. J. B. Lamy, sent his Vicar-General, J. P. Machebeuf, to take charge of it, and to this energetic and effective priest we undoubtedly owe its preservation. With the aid of the Indians and others who lived in the vicinity temporary repairs were made which arrested the ravages of the weather, etc.

That it is one of the most striking of all the Mission buildings within the boundaries of the United States there can be no question. Built in the form of the cross — a plan seldom found in these Western Missions — the *fachada* is distinctive and impressive. The center part, over the main doorway, stands out, both in color and ornament, from the two sides, which, solid and substantial, though plain and undecorated, save for the iron balconies, sustain the two towers, which are the crowning glories of the fachada. The tower to the left is complete, with the usual dome, lantern, and heaven-pointing cross. The one to the right has neither dome, lantern, nor cross, yet these discrepancies instead of detracting from San Xavier's imposing beauty, seem to lend to it a quaint and individualistic charm. A similar failure may have been noted on many of the ecclesiastical structures of the Spaniards. An explanation has been given of this incompleteness, the accuracy of which I am unable to vouch for. It is to the effect that the crown of Spain levied no taxes on incompleted ecclesiastical structures, hence, where funds were low, the buildings pur-

San Xavier del Bac Mission, near Tucson, Arizona.
From a Photograph by Putnam and Valentine, Los Angeles, Cal.

posely were allowed to remain unfinished, to enable the padres to take advantage of this exemption.

A few years ago under its zealous caretaker it was again partially repaired and restored, and within the past few years, under the personal supervision of the present Bishop, the Rt. Rev. Henri Granjon, of Arizona, himself no mean architect, much more work has been accomplished and a solid and ornamental wall erected around it. In addition, upon the hill close by, Bishop Granjon has established a shrine to Our Lady of Lourdes, and this has already won veneration and profound regard from the simple-hearted Indians who still worship here as their forefathers have done in generations gone by.

Always a place of attraction to the refined and traveled visitor to Tucson, San Xavier will become more and more so as the years pass by. It is one of the great historic memorials of the United States, full of romantic associations, and well worth, in its pure architectural glory, all it costs of time, effort and money, to stop over and satisfactorily visit it. And when the interested traveler recalls that he can, with but little more expenditure of time, ride further up the Santa Cruz Valley, past some of the profitable mines of the county, by the Tucson farms, and the fields where thousands of acres are being planted out to guayale for the making of rubber, through the celebrated Revanton ranch and the old time presidio of Tubac, to San José de Tumacacori, another of the famous Missions of Arizona (and which I have fully described in the chapter on Nogales), he will see that in this one ride from Tucson he has much of fascination, charm, and historic association.

Of modern Tucson much might be written. Three separate chapters, viz., those on the Tucson farms, the Desert Laboratory, and the State University, deal with

interests which belong to it in a peculiarly intimate manner. On the line of two railways, the Southern Pacific and the El Paso and Southwestern, both of which companies have built depots of fine architecture, and with the main line of the Southern Pacific of Mexico going down south, directly through Nogales to the northwestern coast of Mexico, its importance as a railway center is evident.

It holds an equally important position on the great Borderland "all the year route" across the continent. There is no winter in Tucson, hence one can travel this route at the time when rains, snows, sleet and mud render the most favored of the northern routes almost if not altogether impassable. Last year (1916) $400,000 worth of bonds were voted for good roads in Pima County.

Its elevation is 2,369 feet, its location in the center of a great valley surrounded by towering mountains, the Santa Catalinas, Rincons, Santa Ritas, Tucsons, and others. These, especially at the sunset and sunrise hours, present such visions of glory, sublimity and color splendor as to suggest scenes worthily belonging to the veritable Garden of Allah. It is no fiction of the imagination to say that no sensitive soul can look upon them unmoved. One feels, as he gazes upon them, as though he should remove his shoes, as well as his hat, and sink upon his knees, for verily he stands upon holy ground and is looking upon one of the sights fitly reserved for angels.

The mines of the Tucson region are now exceedingly active. In every direction, in the mountains and on the foothills, the sound of the hammer and drill, and the loud blast of the exploding dynamite of the miner are heard. To merely catalogue the mines of the county would fill several pages. There are mines like the Silver Bell, those of the Twin Buttes, Mineral Hill and Old Yuma,

THE TUCSON SANITARIUM, SANTA CATALINA MOUNTAINS IN THE DISTANCE.

all of which have been great money-makers for their owners. But new mines are springing up everywhere and some of these are already giving forth clear indications that they will go far beyond any of the older mines in their money-making qualities.

Hence the establishment at Tucson of the United States Bureau of Mines Experiment Station in connection with the State Bureau at the University. Mining activity was never so great as now in and around Tucson, and never were the results so generally profitable. What with new and cheaper methods of mining, and the revolution in methods of extracting even the lowest grade of ores, it is not unreasonable to forecast for Tucson that, within the next few years, it will be one of the great mining centers of the West.

Tucson owns its own water system. Deep wells, which yield an abundant supply of purest water for a city four times the size of Tucson, have been bored and recently nearly $200,000 was voted to improve and enlarge the water and sewer systems. It will soon have the most complete sewer system in the State.

As a residential city for those who are well, or those who are sick, Tucson has especial charms and advantages. Many thousands of anemic, neurasthenic and consumptive men and women have come here during the past twenty-five years to their swift advantage. Equable climate and sunshine every day in the year are not everything to health, but they are wonderful factors towards gaining and maintaining it. There is nothing more advantageous than pure air and nothing more vivifying than sunshine. Out in both of them illness flees; exposing the naked body to them, under favorable conditions, it gallops away. To give needed advice to those who are suffering from diseases of the lungs and throat, the Tucson Sanitarium

was founded. It is a magnificent building, as the engraving shows, well on the outskirts of Tucson, in extensive grounds of its own. Here not only is the sufferer treated in the most approved fashion to bring him back to normal health, but he is *educated* as to the best way of preserving health.

There are first-class general hospitals in the city, the leading one being St. Mary's, under the order of the Sisters of St. Joseph. It was founded by Archbishop Salpoint, in 1880, and at the time of its opening was the only hospital in Arizona. Its wards for medical, surgical, and maternity cases are equipped in the most approved modern styles, and it has a training school for nurses connected with it. Associated with it in management, but entirely separate, is a sanitarium for the treatment of tuberculosis. St. Mary's is undoubtedly the most complete institution of its kind in the Southwest.

But it must not be supposed that one is daily brought face to face with sickness in Tucson. The youths and maidens of the State University, many of them, are types of rugged, virile, powerful and vigorous young manhood and womanhood. On the streets, in the stores, in the warehouses,— everywhere — one meets with men and women in the most perfect health, for it is a self-evident proposition that a climate that will bring back the color to the cheek of the sick, refurnish the anæmic blood with its full quota of red corpuscles, give vim, energy, snap and power to the weak and invalided, will keep in health those who are healthy.

Hence Tucson is growing in favor as a residence city. Its many streets are lined with beautiful homes, for with its growing business, its ready access to every part of the world outside, its fine schools and university, its women's club-house and various clubs, its men's clubs of

every known kind and order, its two daily and three weekly newspapers, its magnificent $100,000 Y. M. C. A., its churches, its theatres, its fine public library, its speedway, its race course and fair-grounds, its four public parks, its magnificent scenery and incomparable surroundings, it draws the most desirable classes of citizens within its borders.

After all these things have been enumerated, however, an occasional objector will ask questions about the *summer* climate of Tucson. That it gets hot no one will deny, but it is a dry heat and therefore is neither enervating nor dangerous. Sunstroke is unknown, and the nights are invariably cool enough for blankets. Then, too, forty miles away is Oracle, one of the choicest mountain summer resorts of the West, where one can fish, hunt, climb trees, motor or loaf and invite his soul, in a hundred different ways. Even nearer still Mount Lemmon (named after Sara Plummer Lemmon, wife of the famous Professor J. G. Lemmon, one of the noted botanists of the West, and herself an accomplished botanist), at an altitude of 9,150 feet, is readily accessible. Here is a perfect forest of pines, literally millions of them, where one may see for himself how absurd is the idea that Arizona is treeless. In due time much of this timber will be lumbered, under the wise supervision of the Forest Service, but a large portion of it will always be preserved as a perpetual summer park for the people of Tucson.

Just one more thing is necessary to make Tucson complete for residence and the best kind of tourist travel. While it has several good hotels, with structures and management that rise above the ordinary, it has waited until 1917 for the erection of a tourist and family hotel on a par with Hotel del Coronado, Hotel del Monte, the

Alexandria and other first-class California hotels. The Geronimo is to fill this last want in a complete and satisfactory manner. It is planned by the same architect as the Los Angeles Alexandria, and neither money, skill, experience, nor enthusiasm are to be spared in its erection, equipment and management.

CHAPTER XXII

THE TUCSON FARMS

In the days of Old Tucson, the Santa Cruz Valley was regarded as unfit for farming land. When the rains came, followed by the growth of herbage, it was fairly good for pasturage, but few of its earlier citizens ever regarded it as capable of being developed into productive farms. This necessitated the purchase of farm products as the city grew, until, in 1914, in addition to all the surrounding neighborhood could raise, there were shipped into Tucson, in carload lots, from the Salt River Valley, California, Kansas and Eastern States, fifteen thousand and sixty tons of barley; one hundred and eighty tons of beans; eight hundred and fifty tons of canned goods; two thousand, one hundred and five tons of flour; five hundred and seventy-two tons of deciduous fruits; three hundred and sixty tons of grain, other than wheat and barley; three thousand, one hundred and sixty tons of hay; one thousand, six hundred and sixty-five tons of potatoes; one hundred and thirteen carloads of beef cattle; nine hundred tons of packing house products; three hundred and twenty-five tons of fresh vegetables; one thousand, nine hundred tons of wheat; and by express, and in less than carload lots, three thousand, five hundred cases of eggs; twenty-two thousand pounds of butter; one thousand coops of live poultry; thirty-five thousand dressed poultry; three thousand, six hundred and fifty gallons of cream; twenty thousand gallons of milk; three hundred and thirty-five thousand pounds of

fresh vegetables; two hundred and fifty thousand pounds of fruit.

Yet it was already known to those who had given study to the subject that every one of these products could have been raised in the Santa Cruz Valley. The soil had been analyzed and found to be excellent in every particular; the climatic conditions were equal to those on the Nile, whose fertility is world-famed; water for irrigation was the only thing needed. These facts led to the organization, in 1910, of Tucson and Chicago business men for the purpose of developing the Santa Cruz Valley lands. Twelve thousand acres of land were purchased. But before making this purchase a corps of scientific and expert engineers, several of whom had been in the employ of the United States Reclamation Service, proceeded to make a thorough reconnaissance of the country to find out whether water could be found for all the irrigation needs. Investigation revealed that the Santa Cruz River has its source in the Huachuca Mountains in southeastern Arizona, about one hundred and thirty miles from Tucson, flowing west and northwest down the Santa Cruz Valley by way of Tucson, emptying into the Gila River as an underground stream. The different ranges of mountains on either side of the valley average about nine thousand feet in height, being covered with snow during the winter months. The mountains and the adjacent plateaus form the drainage area of the Santa Cruz River. The annual rainfall in the valley is from twelve to twenty inches, and the rainfall in the high mountains on either side of the valley runs up to over forty inches annually, which drains down and stores into the underground strata of the valley. This large drainage area is constantly replenishing the supply.

Electric Pumping Station near Tucson, Arizona.

This valley presents a very unusual condition, as the underground gravels are all river or water worn and very open. By actual tests it is proven that the water in this gravel travels from five to seven hundred feet a day, thus producing the condition that these underground gravels absorb a very large percentage of all the flood waters, rain and snowfall from the surrounding mountains, and carry them underground. Therefore, the entire Santa Cruz Valley is a natural underground storage reservoir, the waters percolating through the underground strata and being conserved by this slow process.

The conditions were so unusual that the Chief Engineer of the United States Reclamation Service was led to give attention to them, and his assistants aided the company's engineers in their investigations, upon which over $30,000 was expended. These fully satisfied all the most exacting demands, and now, knowing for a surety that they had a permanent and constant water supply, they constructed the necessary underground diversion system, large conduits, a large cross-cut, which extends a mile through the bed of the Santa Cruz River, bisecting practically the entire valley. In this way a portion of the water needed for irrigation is obtained by gravity, this gravity system being supplemented by nineteen electric pumps installed in this cross-cut. Many other electric pumps are located elsewhere on this project, so that there is no point on the whole twelve thousand acres that cannot receive water within two hours' time.

Hence a complete system has been developed which taps this underground storage water supply, bringing it to the surface and discharging it into canals which distribute it everywhere over the lands where needed. It is confidently asserted that no more reliable and complete

water system can be found on any land project in the West.

The company then proceeded to develop its own lands, before inviting settlers. It wisely decided that results actually attained would be more convincing than words, be they never so eloquent, and they have worked throughout on that principle. Alfalfa was planted out over large areas, and the yield has been remarkable. Six to seven cuttings, and more, per year, are made, and each cutting gives in the neighborhood of one to one and one-half tons per acre. In 1914, a considerable acreage was planted in Egyptian cotton, which brings the highest price on account of its long, strong and fine staple. The Southern States have never been able to raise this highly desirable cotton, and the United States has had to import its needed supply. Such of the first crop on the Tucson Farms as was on lands adapted to the crop yielded a bale to the acre. With cotton at from twenty cents to thirty cents per pound, and much higher during war time, the total value of the crop shows a large return, and it is not unreasonable to assume that when the land is brought to its highest efficiency by perfect cultivation, it will yield from one and one-fourth to one and one-half bales per acre.

Corn and wheat do equally as well, the former, when properly handled, yielding an average of sixty-five bushels, and the latter fifty bushels to the acre.

The climatic conditions that prevail in the Santa Cruz Valley, however, render farming a very different proposition from what it is in the North or Middle West. There is no severe frost, and, with the abundant supply of irrigation water, drought is unregarded. Sunshine is perpetual throughout the year, and experience demonstrates that one can plant a field of wheat or barley in

October or November, pasture the same through the winter months, harvest it in May and immediately plow the ground and plant it to corn, which in turn matures with an average yield of some sixty-five bushels per acre, and the land is ready in ample time for the planting of another crop of wheat for the following season.

Too great stress cannot be laid upon these facts and all they imply. Crops never cease growing. There is no winter, or dormant, season. With reasonable care, and through the exercise of wisdom in the rotation of crops, deep plowing and occasional renewal of certain chemical elements in the soil, crops may be growing in succession all of the time. This means a tremendous increase on the yield, per acre, over that which the ordinary Eastern, Northern or Middle West farmer is wont to obtain, and the fact that the water for irrigation is steady and constant, eliminates the uncertainty and dread felt by those who are dependent upon rain.

Furthermore, the advantageous climate renders pasturage sure throughout the whole twelve months. As a result, dairy and beef cattle can be fed largely on green feed, out of doors. They need no housing to speak of, winter or summer, and the consequence is a healthiness that manifests itself in richer milk, cream, butter and cheese, and a more rapid increase in weight, which, in turn, means largely increased returns to the farmer.

It will readily be seen, therefore, that the farmer works to the greatest possible advantage, and he may also add largely to his income by chicken and hog raising. There is an ever growing demand close by for all the eggs, chickens and hogs that can be produced, and the prices are high.

But not only are the Tucson Farms productive of cereals, alfalfa and other fodder crops, chickens and

dairy stock. They are found to be admirably adapted to the growth of trees. Olives, walnuts, peaches, apricots, mulberries, and, indeed, every variety of fruit, except citrus fruits, are proved to thrive abundantly. The growth of the walnut is gone into on a large scale owing to an interesting discovery. C. R. Biederman, an Arizona Burbank, in experimenting on the walnut, found he could graft the finest varieties upon the native black walnut. This gives a resistant and rapidly growing tree that produces in a marvellous way.

Thus it will be seen that these farming lands offer unusual advantages to those who contemplate a move into a new country. The healthfulness of the region I have fully commented upon elsewhere; close proximity to Tucson, with its magnificent schools and State University, affords every advantage for the highest type of education; and I am reliably informed that farmers are actually making more money on a forty-acre Tucson farm than on any average one hundred and sixty acres of Iowa, Illinois, Kansas or Nebraska corn land.

A list of crops I have seen growing on the Tucson farms would include the following, and yet this is incomplete:

Alfalfa, Bermuda grass, barley, broom-corn, cane, clover, corn, Egyptian cotton, cow peas, wheat, flax, feterita, hay, hops, Kaffir corn, kale, millet, maize, oats, rye, sorghum, Sudan grass, soy beans, sugar-beets, timothy, wheat, apples, apricots, almonds, blackberries, dates, dewberries, English walnuts, figs, grapes, mulberries, olives, peaches, pears, peanuts, plums, quinces, raspberries, strawberries, artichokes, asparagus, beans, beets, Brussels sprouts, cabbage, cantaloupe, casaba melons, carrots, cauliflower, celery, egg plant, garlic, lettuce, muskmelons, mustard, okra, onions, parsnips, parsley, peas, peppers, persimmons, potatoes, pumpkins, radishes, rhubarb, spinach, sweet corn, squash, sweet potatoes, tomatoes, turnips, watermelons.

The Tucson Farms Company owns and operates the

A FIELD OF MILO MAIZE, ON THE TUCSON FARMS, ARIZONA.

largest and most modern dairy in Tucson, known as the Flowing Wells Dairy.

The chief object in operating the dairy is to supply to the people of Tucson the best milk obtainable, and incidentally to furnish an outlet for the farmers who have bought lands of the Tucson Farms Company.

At this time, over eight hundred satisfied customers take the products of the Flowing Wells Company, these products consisting of milk, butter and buttermilk.

As the supply of milk increases, it is the intention to enter more largely into the production of butter, for which there is an insistent and increasing demand.

In this way the company proposes to assist its purchasers of land in disposing of their crops and other products to the best advantage possible.

On inquiry, I found that the land is sold, with a sufficient water right, at very reasonable prices, when one considers the enormous crops that may be produced, and the excellent home market. The selling price is from two hundred to three hundred dollars per acre.

The comparatively small acreage in this portion of Arizona that can ever be supplied with irrigation water, and the great developments in mining in the immediate vicinity of Tucson, providing a local demand for all sorts of products of the soil, present a desirable combination to the farmer, equalled by few localities elsewhere.

The entire Tucson Farms Company project now belongs to Mr. Douglas Smith, of Chicago, who is president of the company, and Mr. Herbert Nicholson, of England, who own all the stock and bonds. Mr. Smith is a well-known and successful business man of Chicago, and is giving much personal attention to the affairs of the Tucson Farms Company. Mr. Nicholson is at present residing in England, but for many years lived in the

United States, where he was engaged in very large agricultural and dairy operations. He also takes a very deep personal interest in the Tucson project.

The vice president and general manager is Mr. Frederic W. Taylor, who was Chief of the Departments of Agriculture and Horticulture at the St. Louis World's Fair, later Director of Agriculture of the Philippine Islands, and who has been prominent in agricultural and horticultural activities for many years. While in Russia, in 1896, he secured the variety of oats known as "Kherson," distributed later by the Nebraska State Experiment Station, which has been more widely distributed and more valuable as an acquisition than any other cereal introduced in many years.

The Secretary of the Chamber of Commerce, Tucson, Arizona, will supply full information upon request.

CHAPTER XXIII

THE DESERT LABORATORY AT TUCSON

In a former chapter I have given a truthful picture of the natural conditions existent upon the deserts of Arizona. How could these be reclaimed? Were they capable of reclamation? Many and lamentable have been the efforts made by the thoughtless and inadequately equipped to accomplish this. Farmers from the East or Middle West, not knowing the conditions in summer, have toiled and slaved to clear a piece of land, plowed it and sown it to grain and waited for God and the blessed rain to do the rest. But the rain never came. Instead, the scorching heat beat upon the poor struggling grain and sucked out what little life it had and left the ground as dead as if nothing had been done to it. Many a man has spent his labor and little store of money for naught, for the desert has no pity, shows no mercy, upon the inadequate and incompetent. It laughs at man's puerile attempts at ditch-digging and pipe-laying where there is no water for ditches and pipes, and the sun shines on with pitiless and relentless energy regardless of man's blasted hopes and withered fields.

Where water could be secured, either from the mountains or wells, crops were assured, but if the water supply was inconstant, one season, aye, a short portion of a season, saw gardens, plowed fields, and orchards burnt out and destroyed.

Hence reclamation must be expected on a large scale,

so as to insure absolute certainty that water would be forthcoming when needed. This implied government aid, or else government handling, and the United States Reclamation Service was organized by Major J. W. Powell, the wise and far-seeing head of the Geological Survey, purely to meet these imperative needs and overcome these adverse conditions.

Then, as a corollary to the work of the Reclamation Service, the Experimental Stations were established. Though under an entirely different branch of the Federal government — the Agricultural Department — the scientists and practical farmers of the experimental farms have worked hard with the Reclamation officials, and others, to bring out successful cultivation of these desert areas. They have done excellent service, and aided materially in guiding the farmer and orchardist in his difficult task. Yet all their work has been handicapped by the cry for immediate results. A farmer with limited capital could not wait for long-continued experiments, and regardless of the fact that wisdom and experience have taught that it is better to do nothing than work blindly and unintelligently, the eternal optimism of the human heart, that blind faith that water and crops must come if plowing, seeding and planting be done, have urged many a too-venturesome farmer to his undoing. In his haste he urged the Experimental Stations for results, and this naturally militated against the thorough and complete work the scientists desired to do. For, ever since the white race has known anything of Arizona, its deserts have possessed a wonderful lure for them in all lines of their activities. The climatologist, geologist, paleontologist, mineralogist, ethnologist, zoölogist, biologist,— all, alike, have yielded to their fascinations. To the botanist, however, they seemed to possess extra and

especial attractions. They desired the secrets of the plants, flowers, shrubs and trees, why they were able to resist the fearful heat and searching cold of the desert climates. The bold interrogative never ceased its challenge. It must be answered. The problems must be solved. Merriam spent months in the fascinating region about the San Francisco Mountains and the Little Colorado River; Coville wrestled with Death Valley, over the California side of the line, and both made valuable and marvelously interesting contributions to our knowledge of the life habits of the desert plants. But little or no systematic study of desert plant life could be carried on, unless some constant endeavor to that end was made directly in the field, which should continue over many years.

To find the men to do this, without governmental aid, seemed impossible, and as years progressed the scientific world made larger and greater demands upon governmental funds, so that the attainment of this desirable end seemed further away than ever. Just at this juncture, however, Andrew Carnegie's munificent donations to science opened the way. The men were already in the field. The two were brought together and in 1902, the Carnegie Institution of Washington authorized Dr. D. T. MacDougal and Mr. F. V. Coville to construct a laboratory at Tucson, Arizona, for the special needs of botanical research in desert areas. Buildings were erected on Tumamoc Hill, in a reserve of about eight hundred and sixty-three acres, bearing characteristic desert vegetation. To aid in the work other desert areas were reserved, in connection with the Desert Laboratory at Tucson, in various parts of the Southwestern States, including the Salton Sea, in California, and the Santa Catalina Mountains, in Arizona.

The purposes of the Laboratory are purely scientific, the aims being to determine the chemical and other elements that enable the plants of the desert to exist and thrive. *Why* plants can do this and that and the other in the torrid heats, and unfrequent rain areas; *why,* when floods or winds transplant them into widely diverse environments they change and become modified in structure, in appearance, in chemical constitution; *why* certain desert plants are able to absorb and utilize moisture through the leaves and main stems as well as through the roots; *why* other plants have the power of storing water in large quantities in bulbous roots while others store it in their enlarged bodies; these and a score, a hundred, other questions pertaining to pure science are the ones that the Director of the Desert Laboratory and his assistants seek to solve.

The man chiefly responsible for the organization of the laboratory and its inspiring genius is Dr. D. T. MacDougal, who is preëminently equipped for this peculiar work. He is an enthusiast on deserts, and knows them by personal exploration. He has been down the Colorado River from the Grand Canyon to the Gulf of California; has crossed and recrossed the desert areas of Arizona, California and the Peninsula of Lower California again and again. He and his faithful assistant, Godfrey Sykes, have studied and mapped the whole desert region of the lower Colorado River, that to most men is anathema on account of its inhospitable character. Then, to compare conditions here with deserts elsewhere, Dr. MacDougal wandered over the Libyan Deserts, and familiarized himself with plant life in semi-barren areas as well as the oases of the upper Nile region.

Besides, he is an enthusiastic scientist, deeply imbued with that keen curiosity that seeks to know the basic facts

THE PHOTO-CHEMICAL HOUSE AT THE DESERT LABORATORY, NEAR TUCSON, ARIZONA.

behind all phenomena. He is the detective of desert plant life. With a patience that never tires, an exuberance of spirit that triumphs over every hardship, a physical constitution that enables him to do the thing he desires, a keenness of intellect that discovers "clues" to facts undreamed of by casual observers, a trained observation that far surpasses that of the Indian, and powers of deduction that come only as the outcome of a lifetime of serious and earnest devotion to science in its purest phases, he has thrown his whole life into this one work with an absorption of interest that is as complete as it is incomprehensible to those who know nothing of the urge behind it. To know "why," and then to apply the knowledge gained to the final conquest of the desert is Dr. MacDougal's aim and end. Man's soul thirsts for conquest. Thousands have succeeded in conquering other men, hundreds have conquered other countries, and have triumphed in the fields of all material endeavor, scores have laughed as they have dragged forth the hidden mysteries of the sciences, but, as yet, none have really conquered the desert. Here is a new field for human endeavor; a new world to conquer. True, the irrigationist has placed water on the desert and solved the problem so far in that way; but Dr. MacDougal and his associates seek to compel the desert to be productive — to blossom as the rose — where water in ordinary quantities cannot be procured.

Yet it must be remembered that in carrying on their researches the pure scientist has no *immediately* economic results in view. He makes no claim to being practical. He is after facts, no matter where they lead him. He seeks to solve the problems of desert life, whether the solutions have a practical bearing upon productive farming or not. His life is a devotion to science

for science's sake, regardless as to whether there is any monetary outcome as the result of his labors. And it was because of this fact that Mr. Carnegie's munificence was so helpful. No government, no state legislature, is yet ready to do much in the way of engaging the pure scientist. The results attained are too vague. Though they may ultimately be of incalculable benefit to mankind they are not available for immediate purposes, and the ordinary legislature of 1917 is not voting appropriations for A. D. 1950 or 2000.

Let me seek to explain, briefly and without technicalities, some of the work the Desert Laboratory seeks to do. It is well known to botanists and horticulturists that great changes often occur in plants that have been transferred from one country to another, where the conditions of life are entirely different. Color, time of bloom, habit, structure of the root and shoot, general aspect, and economic value are all affected by the change. But no scientific, systematic and long-continued tests of these things have been made, so that the *how* and *why* of the changes could be recorded. *How* did the plants adapt themselves to their new environment? And were the changes that occurred merely temporary or were they passed on to the descendants? If they were passed on, what would be the results of the plant restored to its original environment? *Would* the changes still persist, or would the plant revert to its former condition? These and a score of similar questions arose in the minds of the scientists, and Dr. MacDougal is seeking to solve them. He has taken plants from one desert level and transferred them to two or three higher levels, where soil, climate and rainfall are different, and even removed desert plants to Carmel-by-the-Sea in California, where there is a belt in which fog prevails during many days

of the year. Observations are systematically and thoroughly made of the changes that take place in roots, leaves, flowers, fruits, stems, time of flowering, and general chemical constitution. The intention is to keep this up for many generations of the plants tested, so that if changes occur their permanence will be determined. Then they will be taken back to their old or still different environment and similar tests again indulged in. Thus some of the problems of evolution may be discovered, and a practical turn may be given to the transfer of plants from one region to another.

Dr. Cannon is studying the root habits of desert plants.

Most people imagine that desert plant life is maintained because the plants send their roots deep down to where water is to be found. Even as casual an observer as myself long ago discovered that this was not always the case, and in my book, *The Wonders of the Colorado Desert,* I called attention to the *long surface* roots that existed. As Dr. Huntington says:

"In the great gravel slopes, which constitute a large proportion of most deserts, the water-level is scores or hundreds of feet below the surface, so that the roots can not possibly reach it. Accordingly the roots spread horizontally to great distances, keeping close to the surface to get as much water as possible when occasional rains moisten the ground to a depth of a few inches or possibly a few feet. This explans why desert plants seem to be scattered so sparsely. They look scattered, but, as a matter of fact, they are as crowded as the plants of wet regions. The individuals may be ten or twenty or more feet apart, but there is no room between them for others, simply because the roots spread widely in a horizontal direction, and those of a single plant require all the available moisture of a considerable area."[1]

When he began his studies Dr. Cannon had no immediate *practical* results in view. He sought to understand

[1] *The Desert Laboratory, Harper's Magazine,* April, 1911.

the facts. But as his knowledge of the facts increases he may be able to apply it to such practical ends as the growing of wheat, barley, fruit or vegetables, in which the needed kind of roots, stems, leaves and other organs may be developed.

Or, as Dr. Huntington expresses it:

"In course of time it is possible that by careful selection we may obtain a variety of wheat which, as soon as it sprouts, will begin to develop the roots horizontally, and will spread them far and wide before it sends up much of a shoot. Such wheat may not grow in dense fields like those of moist regions, but in isolated heads, perhaps, with several stalks to a head. It might not yield crops equal to those of rainy regions, but it would at least give fair crops on lands which are now entirely wasted." [1]

Dr. MacDougal is also carrying on another most fascinating series of experiments. He is actually becoming, himself, a potent and determining factor in the evolution of plant life. In the past many changes have taken place in the development of plants, and man has been interested in watching and recording these developments. But he has been able to do nothing more. He was merely the outsider watching operations in which he could take no part. Now, however, Dr. MacDougal is changing this. By means of highly diluted solutions of various chemicals he is affecting the ovaries of plants previous to their fertilization. These solutions so affect the various tissues that the pollen is changed, and "the seeds produced by the union of the nuclei of the pollen and ovule possess certain quantities not belonging to either parent." This may or may not cause marked and important changes. Even if it does produce a new and definite variation from the parent type, tests have to determine whether the new manifestation is permanent

[1] *Harper's Magazine*, April, 1911.

or not. The scientist watches eagerly to learn whether its seeds will produce plants of the new type or the old.

That thousands of failures have occurred was to be expected, but that some definite and striking results have been produced in a few plants is gratifying in the extreme, in that it points the way to future possibilities upon lives hitherto unsuspected. The *Oenothera biennis* is one of the successful experiments. After the changes were produced by the chemical infusions, the plant was watched carefully for six and more generations and "the derivative still retains its characteristics and shows no tendency to revert to the parent type." It has also been attempted to hybridize the new with the old species — a thing easy to accomplish were the new product only a *variety* instead of a definite *species*. But though the new and old forms were planted so closely together that their branches interlocked there has been little or no commingling. Hence there is little question that a new and distinct species has been produced.

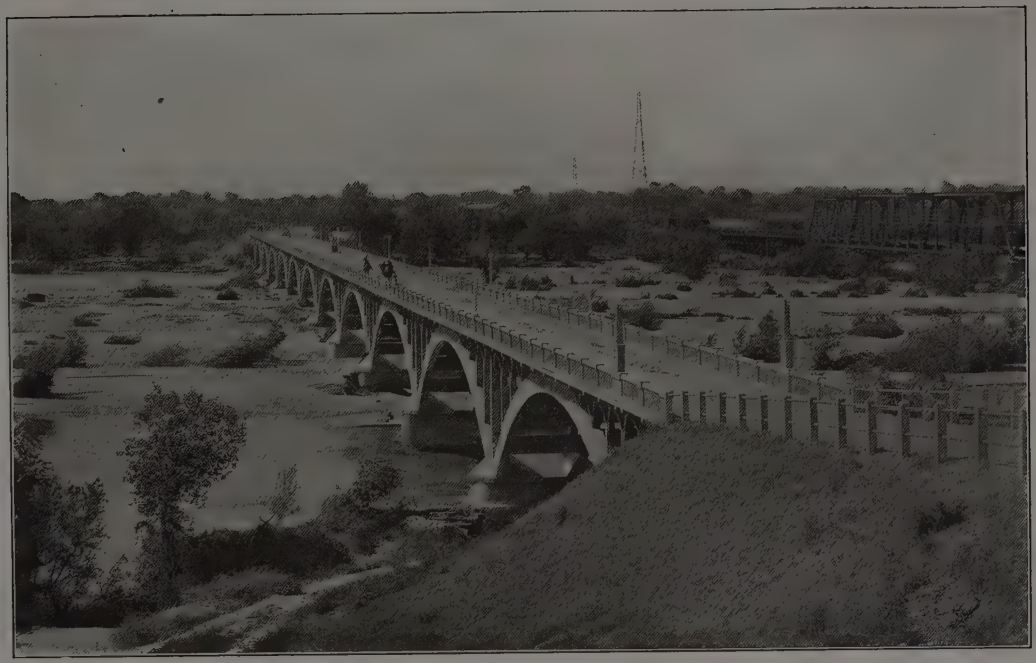
Who can foretell what this discovery may mean in future developments? As Dr. Huntington sagely remarks, however, there are two sides to these possibilities:

"The importance of Dr. MacDougal's discovery will appear greater with the lapse of time. Hitherto in all our attempts to improve the quality of plants and animals we have been obliged to wait for some natural variation, produced by causes not yet understood, and then carefully to preserve the variant until it changes again in the desired direction. Now it appears as if man might soon be able to induce variation in plants almost at will. Where formerly only one seed in a million showed any distinct departure from the present type, a thousand may now be made to possess new attributes. Mankind has suddenly acquired a new and untried weapon which may be of incalculable importance, not merely for good, but for ill. Poor judgment on the part of some experimenter may allow the evolution and escape of some useless grass of stunted growth and low food value, so hardy as to drive the valuable grasses from the hay fields of a

state. The risk, of evil, however, is far out-balanced by the possibilities of good."[1]

These, then, are some of the problems the Desert Laboratory has set itself to solve. The conquest of the desert has but just begun. The methods of the past are to be reinforced and enlarged by the research of the chemists, the biologists and the new science of this new day. That in this work Dr. MacDougal and his associates will have an honored, important, and primary place is already assured.

[1] *Harper's Magazine*, April, 1911.



BRIDGE OVER THE SALT RIVER, TEMPE, ARIZONA.
On the Apache Trail.

CHAPTER XXIV

THROUGH APACHE-LAND OVER THE APACHE TRAIL

Most people never saw an Apache, singly or with his band, ride over the rugged mountains, mesas, deserts and up and down the canyons of Arizona, as I have done. It is almost impossible for the ordinary mind to conceive that a horse, carrying a human being, can perform such feats as were the every-day experiences of these Bedouins of the American deserts. Reckless? — they knew not they were reckless; dare-devils? — it was their habitual mode of riding; exhausting? — they were tireless, Nature's perfect instruments of action, muscular as a grizzly, persistent as a panther following his prey. Well might they keep the whole of Sonora, Mexico, and Arizona, U. S. A., in terror for centuries — as they actually did — until they were hunted down and properly pacified.

The landscape they rode over, trampled under their horses' feet, was befitting their own nature. It was wild, rugged, desolate, awe-inspiring, weird, mountain-surrounded, different. It was distinctly Arizonan *and* Apachean. Nothing could tame it, subdue it, bring it under control, gentle it. So said the earlier travelers who saw it, just as they said of the Apache.

Yet they were wrong. The Apaches have been tamed and gentled; they have disciplined themselves, as well as been under the chastening rod of the United States army and Indian bureau, and, equally surprising, the wild of

the landscape is now a part of civilized man's daily outlook. Where the Apache used to ride in wildest abandon the automobile now races, and my lady, in her silks and satins, venturing from the parade grounds of Fifth, Euclid, Commonwealth, Pennsylvania, St. Charles, and other ultra-civilized avenues of Eastern and Southern cities, looks out in wonderment and surprise, often in enthusiasm and delight, over scenery her eyes have never before contemplated. Here is the Arizona rarified atmosphere, translucent, pellucid, clarified beyond anything elsewhere on earth, stimulating to senses and imagination and truly air fit for angels and gods. Here are desert and mountain colors found only in lands of magic enchantment. No dweller in cities ever enjoyed such resplendent glories as are daily food here. Here are contrasts wider than if Pharaoh and Moses chatted with Bryan and Mrs. Pankhurst; contrasts living and dead, scenic and ethnologic. Here ancient and modern dwell together in harmonious unity; cliff-dwelling and electric-power plants, superstition and civilization joggle elbows, and one refers to events that happened not "befo' de war," but "before the flood." No pantomime, enchanted land, scenic fantasies that thrill, as the changing scenes of "the Wizard of Oz," fairy landscapes designed by the most imaginative of scene-painters, ever came into the same category with this land of actuality and reality now as easily traveled as one goes from one reception to another.

For years travelers from the Atlantic to the Pacific sides of our vast continent have asked for "breaks" in the journey. They grew weary of the monotonous confinement of four, five, days in a Pullman car. They longed for a touch of the open, and, while they did not confess it, thousands felt the "call of the wild," and the

Over the Apache Trail in the Olden Days.
In the Salt River Canyon, Arizona.

"lure of the desert." It was left for the Southern Pacific Company to supply these demands of its exacting travelers. It is all planned, all arranged, just as the ferry-boats from New York to Hoboken, Oakland to San Francisco, are planned, arranged. Taking any of the trains of this company from the east to the west, which connect with their Sunset Route, one in due time reaches Bowie, Arizona, where the main line is left for a four hours' ride over the Arizona Eastern Railway to Globe. We are already in Apache-land. These wild and savage nomads roamed up and down these canyons long before the prospectors made their appearance and discovered the great copper deposits that for generations have kept white men working here.

A night's comforting rest at a good hotel prepares one for the morning's ride and breakfast, ready for the auto-stage which toots promptly for us at 8:30. We are ready. We are off. This is the new version of the magic carpet, and far more in accordance with modern ideas. Here you are on *terra firma,* a competent chauffeur at the wheel of the high-class motor car. A slight jolt once in a while, a gentle jar, to remind you that you are really on earth, that it is not your *astral* body taking flight to realms unknown to your *now* body, but otherwise the road is firm, smooth and well engineered all the way. Globe smelters, Miami mining-shafts and frontier civilization are soon left behind. We swing into the hills. The pure air intoxicates us, but it is a new type of intoxication. It is a genuine physical and mental exhilaration. Fourteen miles pass so speedily that we feel we have scarcely started, yet we have wound around rugged mountain shoulders where, but for man's magic engineering skill, only the eagle could have soared, and new panoramas have opened and shut to our gaze.

Now an extensive view of the Apache Mountains is given, and speedily, when we rise to a point 3,700 feet above sea-level, our delighted eyes dwell upon the sixteen-mile-away Sierra Ancha, while sixty miles to the northwest, in the Mazatzal range, tower the "Four Peaks," nearly 8,000 feet in the velvety blue of the Arizona sky.

Of course you did not expect you were coming to a city boulevard; you were not so foolish as to imagine this rough country has been transformed overnight into the smooth easiness of a city park. You are in the wilds. Extra refinements and luxuries are not provided, nor would they be in place on this ride.

When we reach the Summit, just two feet less than four thousand in elevation, a panorama of Resplendent Glories and Weird Mysteries is spread out at our feet. We recall that Browning cried: "Look thou not down but up," yet we pay not the slightest attention. Our gaze is held down, gladly, willingly, delightedly, upon this unique scene. You know Gustave Doré's Bible pictures of the deluge, and his *Ancient Mariner* scenes? Here they are! You know the creepy sensations Edgar Allan Poe's stories used to give you? You feel them now! You remember the mental stimulus and exhilaration you felt when the sonorous sounding and stately steps of Milton's verse rang in your ears? You feel the same stimulus and exhilaration here! You recall the vivid thrill of satisfaction when you read in Dante his incomparable descriptions of the overthrow and utter damnation of all evil? You get the thrill again here! For before us are Deluge, Ancient Mariner, Unseen Mystery, Weirdest Happenings, Battles of Angels and Devils, Heaven, Purgatory, and Hell, all commingled, joggling each other, openly displayed, while the only

AT THE FOOT OF THE FISH CREEK GRADE, ON THE APACHE TRAIL.

peculiar factor is the great crystal sea, glistening in the bottom of the mountain bowl, as though it were the bathing place of angels and fiends and on which the enraptured gaze would soon discover new and hitherto unknown types of vessels.

What have I said? Read it again! Words! Words! Words! But cannot you understand what I am driving at? I'm trying to tell you of the untellable. I'm trying to describe the indescribable. That is what it amounts to. The words I have written are merely the suggestions of emotions this scene awakens within me. It is not often that scenery evokes my tears. This always does; just as some music does,— just as the movement of large bodies of drilled men does, just as the solemn mass of a cathedral does, just as the recollection of a great man's heroic deed does. I could sit on this Summit and dream and dream for hours, and then begin and dream again.

But the auto begins the descent. Down, down, we go, into the enchanted bowl. Believe in enchantment? Of course we do; we can't help it here. We're fully under the influence, and none of it is lost by the startling changes that take place — now looking out over the wide expanse of the sun-kissed and diamond-bedecked sea, the next moment whirling around an overhanging cliff into an abysmal ravine, and then stopping to go up a canyon to some interesting cliff-dwellings. There are several groups of them. Community homes they were, with accompanying storage rooms, where corn, grass-seeds, fruits and vegetables were kept for times of famine or drought. One house has twenty rooms. Ancient pottery, corn cobs, corn itself, cotton weaving, turquoise beads, basketry, stone implements have all been taken from these ruins. Where did they get the corn?

It was a gift of the gods. On their pottery is every geometrical design known to modern science; in their cotton- and basket-weaving every stitch produced by modern looms. Great inventors were these quaint people of a prehistoric past. Where were their cotton-fields? Long before there were any cotton-fields "way down South," these dusky ancestors of our present-day Pueblo Indians were planting, cleaning, carding, spinning and weaving cotton. But it is not true that because these doorways are small, these ceilings low, their inhabitants were "Little People." That is a guess of the little-visioned. They were as tall as the modern guessers, for so their bones reveal. They made small doorways in order that they might find slabs of rock large enough to act as doors, for they had not learned the art of sawing logs into lumber and making wooden doors. Perhaps, too, they were pursued by fierce and warlike foes bent on their ruthless extermination, and perhaps they were not. I have tried to present this whole matter in the light of the fullest recent scientific investigation, and the results will be found in my *Prehistoric Cliff-Dwellings of the Southwest.*

Leaving the cliff-dwellings our motor soon carries us to one of the most stupendous works of modern engineering. Here is constructive civilization, work for the heartening, encouraging and uplifting of mankind. It needs no specious arguments, as does war, to justify its mere existence. Man's genius and skill have replaced, by the erection of solid masonry, the splitting, cutting, or eroding work of centuries in breaking through the mountain wall which once compelled the housing of a vast lake in the area the Roosevelt Lake now covers. A wall 1,125 feet long, 284 feet high, and 168 feet thick at its base is no mean dam, and this, too, is

named after the president who furthered the work of the U. S. Reclamation Service all he possibly could. The waters of Salt River and the Tonto come flowing down from a watershed of 6,260 square miles in extent, and are then distributed in the Salt River Valley over 360 square miles, where fruits and flowers, trees and fodder plants, grain and vegetables have displaced sahuaros, cactus, yucca and salt bush; apricots, pears, peaches and oranges take the place of mesquite, desert willow, smoke-tree and ironwood, and thorough-bred Jerseys, Holsteins and Herefords roam over land once sacred to the dartings to and fro of lizards, horned toads, chuckawallas and rattle-snakes.

Who would not rather be the creator, the engineer of these marvellous and beneficent changes than the victor of a score of great battles that carry in their wake devastation, death, destruction, misery, despair, banished happiness?

Yet these scenes have echoed to the shock of firing of guns and field pieces. Crook, Lawton, Miles, King and others have commanded troops here to follow Apaches to their death. Cochise, Mangas Colorado, Geronimo, and other Apache chiefs, have ridden wildly, madly, furiously ahead of or behind American troops over every mile of this region. The bravest of the brave of all North American Indians, fearless to the highest degree, uncowed by forces ten, twenty times their number, they fought on for freedom and independence. Of course they were wickedly cruel, horribly vindictive, vilely treacherous — why shouldn't they be? They were avowedly savages. No one of intelligence ever expected them to play the bloody game of war in white kid gloves, or to respect the white man's rules of the game. Why should they? The tiger digs his claws in as hard as

he can, and strikes anywhere, everywhere, anyhow. He is a brute, a savage. The panther slinks and sneaks and lurks and dogs. It is his nature. The wild cat and lynx know but one law,—kill or to be killed, and to avoid being killed by killing their foe is the highest morality they know. The Apache was the same. His code has been expressed in detail by reference to these wild animals. He was the original exponent of the "highest type of modern warfare."

If one desires to stop for a while amid these historic, memorable and modernly scientific surroundings a comfortable hostelry is provided, in The Lodge, perched on a rocky promontory between the east and west arms of the lake. We ride across the top of the dam to it. To see the cliff-dwellings properly one should remain here overnight, especially if one be an angler fond of black-bass fishing. Hundreds of thousands of them await capture by the rod, reel or trolling-spoon.

In a very short time after this book appears the Southern Pacific Company will have built a quarter ($250,000) of a million dollar hotel on Roosevelt Lake, where travelers will find every luxury and comfort. The intention is to let Americans and other world-wide travelers see the wildest part of Arizona in the easiest and most comfortable manner—that is, one may go out from and return to the cosiest, most luxurious hotel in the Southwest, and do his fishing, hunting, exploring, rambling amongst cave- and cliff-dwellings and the like, with this restful thought ensconced in the back of his brain.

From the Roosevelt Dam it is eighty miles to Phœnix, over a road largely built by Apaches; not wild Apaches of the old fighting days, for they built no roads, but self-disciplined Apaches who said to Louis C. Hill, Super-

vising Engineer of the U. S. Reclamation Service: "Tell us what you want us to do; show us how to do it; then leave us alone. We need neither bosses nor spotters. We'll do our work faithfully and well." And we, now, are riding over a road, cut on precipitous sides of mountain cliffs, and gaping canyons, over gulch and plateau made by those whilom savages, absolutely under the conditions I have named. How many groups of "civilized" workingmen could be trusted with such work, with such freedom? Personally I am trying to pattern after the Apaches in many things, and furthermore, I am exceedingly anxious that millions of smug Americans may learn the fact and be incited to do likewise.

The wild waters of Salt River dash down their rocky bed far away below, but they are tamed now — like the Apaches,— and are going on their beneficent mission to the smiling valley. The scene is ruggedly inviting, for on every slope are ocatillas, chollas, mammillaria, opuntias, cactuses, amoles, agaves, echinocactuses, sahuaros in bewildering variety, and leading the eye to the velvet blue of the sky where are domes, buttes, minarets, spires and towers crowning masses of rocky layers of red, pink, chocolate, vermilion, buff, orange and cream, where Nature's paint-pots once were overturned.

We look back, ere we finally pass away from Roosevelt Dam, for in this year of our Lord, 1917, the spillways are overflowing, and it is not a great stretch of the imagination to conceive ourselves in a lesser Yosemite, with foamy falls to justify us.

Now, on we go and ten miles away from the dam we see the Old Woman's Shoe Mountain, the Eagle Peak, and finally Arrowhead. We are on a genuine mountain road, up and down, turning and twisting around and around. Then we enter Fish Creek Canyon, full of

lights and shadows, charms and thrills until we reach the meal station. No! don't expect a description of a banquet. It is a real old-fashioned, pioneer day stage-station meal,— probably fried ham, boiled beef, cabbage, beans with chili, cold slaw, bread, pie, cheese and coffee, — but it is good, for we are hungry, and what the meal lacks in service and elaborate preparation it possesses in staying qualities.

While you are enjoying your after-lunch cigar let me tell you one exciting incident that occurred within six or seven miles of where you sit. This is called the Apache Trail. Far more justly should it be called the Apache's Country. Trail! One trail! There are scores of trails; trails in every direction, north, south, east, and west, for the Apaches roamed over every inch of this region and within a radius of two or three hundred miles. Strike out for any mountain peak, any canyon, any ravine, any cluster of trees, and you will run into a place reeking with memories and stories of Apaches. These trails are everywhere, crossing and crisscrossing the country like a dozen cobwebs superposed one upon another. Do you see yon quiet looking canyon? Two or three miles up there one of the most disastrous battles of Apache warfare took place. Captain Bourke tells the story. After the Apache scout — Natanje — had led them a merry route up and down the steep slopes of the Salt River — just picture this half a mile or so after you leave the Roosevelt Dam — the troops came to where Natanje recommended that Lieutenant Ross be sent forward on the trail with twelve or fifteen of the best shots among the soldiers. They were to reach a cave in which Natanje had been brought up, and where, he assured the officers, a large band of renegade Apaches would be found.

"Natanje led them down the slippery, rocky, dangerous trail in the wall of the gloomy canyon, which in the cold gray light of the slowly creeping dawn, and under the gloom of our surroundings, made us think of the Valley of the Shadow of Death. 'They ought to be very near here,' said Major Brown. 'Good heavens! What is all that?' It was a noise equal to that of a full battery of six-pounders going off at once. Brown knew that something of the greatest consequence had happened, and he wasn't the man to wait for the arrival of messengers; he ordered me to take command of the first forty men in the advance, without waiting to see whether they were white or red, soldiers or packers, and go down the side of the canyon on the run, until I had joined Ross, and taken up a position as close to the enemy as it was possible for me to get without bringing on a fight; meantime, he would gather up all the rest of the command, and follow me as fast as he could, and relieve me. There was no trouble at all in getting down that canyon; the difficulty was to hold on to the trail; had any man lost his footing, he would not have stopped until he had struck the current of the Salt River (Salado) hundreds of feet below. In spite of everything, we clambered down, and by great good luck broke no necks. As we turned a sudden angle in the wall, we saw the condition of affairs most completely. The precipice forming that side of the canyon was hundreds of feet in height, but at a point some four or five hundred feet below the crest had fallen back in a shelf upon which was a cave of no great depth. In front of the cave great blocks of stone furnished a natural rampart behind which the garrison could bid defiance to the assaults of almost any enemy; in this eyrie, the band of Nanna-chaddi felt a security, such as only the eagle or the vulture can feel in the seclusion of the ice-covered dizzy pinnacles of the Andes. From the shelf upon which they lived these savages, who seem to me to have been the last of the cliff-dwellers within our borders, had on several occasions watched the commands of Sanford and Carr struggling to make their way up the stream in the canyon below.

". . . . The fearful noise which we had heard, reverberating from peak to peak and from crag to crag, was the volley poured in by Ross and his comrades, which had sent six souls to their last account, and sounded the death-knell of a powerful band. The surprise and terror of the savages were so complete that they thought only of the safety which the interior of the cave afforded, and as a consequence, when my party arrived on the scene, although there were a number of arrows thrown at us as we descended the path and rounded the angle, yet no attempt was made at counter-assault, and before the Apaches could recover from their astonishment the two parties united, numbering more than fifty, nearer sixty, men, had secured position

within thirty yards of one flank of the cave, and within forty yards of the other, and each man posted behind rocks in such a manner that he might just as well be in a rifle pit.

". . . . Brown's first work was to see that the whole line was impregnable to assault from the beleaguered garrison of the cave, and then he directed his interpreters to summon all to an unconditional surrender. The only answer was a shriek of hatred and defiance, threats of what we had to expect, yells of exultation at the thought that not one of us should ever see the light of another day, but should furnish a banquet for the crows and buzzards, and some scattering shots fired in pure bravado. Brown again summoned all to surrender, and when jeers were once more his sole response, he called upon the Apaches to allow their women and children to come out, and assured them kind treatment. To this the answer was the same as before, the jeers and taunts of the garrison assuring our people that they were in dead earnest in saying that they intended to fight until they died. For some moments the Apaches resorted to the old tactics of enticing some of our unwary soldiers to expose themselves above the wall of rocks behind which Major Brown ordered all to crouch; a hat or a war bonnet would be set up on the end of a bow, and held in such a way as to make-believe that there was a warrior behind it, and induce some one proud of his marksmanship to 'lay' for the red man and brother, who would, in his turn, be 'laying' for the white man in some coign of vantage close to where his squaw was holding the head-gear. But such tricks were entirely too transparent to deceive many, and after a short time the Apaches themselves grew tired of them, and began to try new methods. They seemed to be abundantly provided with arrows and lances, and of the former they made no saving, but would send them flying high in the air in the hope that upon coming back to earth they might hit those of our rear guard who were not taking such good care of themselves as were their brothers at the front on the skirmish line."

All this was mere preliminary to the real fight, which now began in earnest. It was impossible to escalade the cave without ladders, as the great rock wall in front of it was fully ten and more feet high and as smooth as the palm of the hand. At first it seemed as if a long siege would be necessary, until some one noticed that the roof of the cave so slanted that bullets fired against it would glance downwards among the Apaches who had massed

immediately back of the rocky rampart. This suggested the tactics which were immediately followed and which led to the total extinction of practically the whole band. The soldiers were ordered to fire at the roof, and the shrieks and wails that followed soon convinced the attackers that their shots were having terrible effect.

Then, suddenly, there was a lull on the part of the Apaches, and from the silence there came the weird chant, the death song, half wail, half exultation, the frenzy of despair and the wild cry for revenge. This led the Apache scouts of our soldiers to cry out a warning. "Beware! They are desperate and getting ready for a charge!" None too soon was the caution given. Let Bourke describe what follows:

"'Look out! Here they come!' Over the rampart, guided by one impulse, moving as if they were all part of the one body, jumped and ran twenty of the warriors — superb-looking fellows all of them; each carried upon his back a quiver filled with the long reed arrows of the tribe, each held in his hand a bow and a rifle, the latter at full cock. Half the party stood upon the rampart, which gave them some chance to sight our men behind the smaller rocks, in front, and blazed away for all they were worth — they were trying to make a demonstration to engage our attention, while the other part suddenly slipped down and around our right flank, and out through the rocks which had so effectively sheltered the retreat of the one who had so nearly succeeded in getting away earlier in the morning. Their motives were divined, and the move was frustrated; our men rushed to the attack like furies, each seeming to be anxious to engage the enemy at close quarters. Six or even seven of the Apaches were killed in a space not twenty-five feet square, and the rest driven back within the cave, more or less wounded."

One tall, well-proportioned, finely-muscled Apache, with bold manly countenance, slipped down unnoticed from the rampart and made his way to the space between the two lines of soldiers, and, not seeing the rear line, imagined he was safe in giving the signal for his com-

panions to join him, but at his first shout, twenty carbines were pointed in his direction, and his shout of triumph became his death note, for he was literally shot to pieces. While the fierce conflict was raging, the death chant from the cave growing louder and wilder, the voices of squaws clearly uniting with those of the men, and shots rapidly being fired from both sides, though on the part of the Apaches it was exactly like the desperate endeavor of rats caught in a trap, Captain Burns with Company G, hearing the firing at a distance, hurried to join the fighters. When they reached the summit of the precipice they halted to let the men get their breath. Looking down over towards the cave they saw the Apaches behind their rocky rampart. Some of the soldiers were immediately lowered by the suspenders of their comrades to where they could fire upon the Indians with their revolvers. Then Captain Burns immediately gained another idea. He ordered his men to roll several of the huge boulders, which covered the surface of the mountain, and drop them over on the unsuspecting foe. Bourke says:

"The noise was frightful; the destruction sickening. Our volleys were still directed against the inner faces of the cave and the roof and the Apaches seemed to realize that their only safety lay in crouching close to the great stone heap in front, but even this precarious shelter was now taken away; the air was filled with the bounding, plunging fragments of stone, breaking into thousands of pieces with other thousands behind, crashing down with the momentum gained in the descent of hundreds of feet. No human voice could be heard in such a cyclone of wrath; the volume of dust was so dense that no eye could pierce it, but over on our left it seemed that for some reason we could still discern several figures guarding that extremity of the enemy's line — the old 'Medicine Man,' who, decked in all the panoply of his office, with feathers on head, decorated shirt on back, and all the sacred insignia known to his people, had defied the approach of death, and kept his place, firing coolly at everything that moved on our side that he could see, his rifle reloaded and handed back by his assistants — either squaws or young men, it

was impossible to tell which, as only the arms could be noted in the air."

This latter method of attack had done the horrible business. About noon preparations were made for a charge, for it was still uncertain whether the Apaches had retreated to the inmost recesses of the cave, but there need have been no fear. Very few, either of men, women or children, had escaped being severely wounded, even though life still remained. How any of them escaped complete destruction seems a mystery. Let the accompanying photograph, made twenty or more years ago, and as many years as that after the dread occurrence, tell its own tale. The slaughter of this band was complete. It would never again take toll of the life of white man, woman or child.

This is the kind of story that may be told of a score or more places on, or near, the Apache Trail. Some one had to fight to win the immunity and freedom from fear the passengers on Wesley Hill's fine automobiles now enjoy. But it is well to know something of how this freedom was secured, hence the long digression for the telling of this part of the story.

After leaving Fish Creek station we come to the real thrilling portion of the road from the scenic standpoint. The canyon seems to be "blind"—our road a mere pretense to lure us in some secret lair, but, just as it seems impossible to go further, it swings to the right and begins to climb. From a distance our car must look like a fly on a wall, and though we go up on "high," we crawl. The rocks are wild, rugged, impressive, grand; the canyon below, threaded with a silver stream, and made bright with many rustling leaves.

We breathe easier when the summit is reached, yet when we look down whence we have come, and see Fish

Creek station a thousand feet below, and finally reach Cape Horn, where a matchless view of country is spread out in gentle slopes at our feet, leading the eye out on to the rugged mountains of the Northwest, we find ourselves breathing deeply again. But this time it is with excitement at the unexpected grandeur and awesomeness of the view. A titanic workshop, where demons and men have hurled great masses of rock at each other, ere the waters brought in the soil to fill in the spaces between. Imagination runs riot in such scenes. We wish Doré were here, and then Turner, to give to others some ideas of the weirdness of the forms, and the splendor of the colors our eyes rest upon.

Soon we come to Canyon Diablo with its narrow and abysmal depths, a mere stone's throw from our road, and as we rapidly descend, Niggerhead Mountain seems to rise. After passing through Black Canyon we come to our last divide, near the base of the Superstition Mountains — on our left — and the whole glory of the Salt River Valley is before us.

Indian legends of the Pimas tell us wondrous stories of these rugged and impressive mountains. It is an Indian version of the flood story of the Bible, and the foam and spume have left their marks on the topmost peaks, while all around, in the spires and pinnacles of rocks are the wretched men and women who fled here for safety.

As we ride along at the base of this majestic range the new and transformed Garden of Allah opens up more fully before us. *Once* a desert of deserts — a wild, inhospitable land of cactus, sahuaros, salt-bush, creosote and sage, where coyotes howled and yelped their despair, and even the horned-toad, lizard and rattle-snake felt the desolation; *now*, a thriving land of beauty and cultiva-

SCENE OF THE " FIGHT OF THE APACHE CAVE."
Photograph taken forty years later.

tion, of orange, olive, apricot and peach orchards, of smiling fields of corn, alfalfa and sugar beets, where happy people live in homes of refinement, culture and content.

Our motor engine purrs its satisfaction at the good roads and the pastoral character of the scenery, as we dash along. Sunset comes with the magic of its colorings, tints, shades and faint hints of new colors. Pinks fade into saffrons, saffrons into canary, and then a gentle rose blush flushes everything with its delicate suggestion. We pass through Mesa, where the State Normal School stands; Tempe, where the Mormons settled in early days; and in the near south we catch glimpses of Chandler, with its rarely beautiful, unique and hospitable San Marcos hotel. Those who have time and are *informed* — wise, some people call it — to the San Marcos, insist upon being taken there and spend a day, a week, which often expands to a month, for reasons I shall recount in another chapter. Others ride on into Phœnix, spend a day or two studying that interesting and rapidly progressing city, and then board their Pullman for the continuation of their railway journey west.

But whether they delay for a day or two or go straight on, all travelers over the Apache Trail gladly confess that they take memories with them that will never be effaced.

CHAPTER XXV

PRESCOTT AND YAVAPAI COUNTY

When Arizona was dismembered from New Mexico and raised to the dignity of a Territory in its own right, the first legislature assembled in Prescott in September, 1864, and there divided the vast area into four counties, viz., Pima, Yuma, Mohave, and Yavapai. The last named county reached from the New Mexican line on the east, the Utah line on the north, the middle of the Gila River on the south, and the present line on the west. This has since yielded Gila, Maricopa, Coconino, and Apache counties, for the original area was nearly as large as the State of New York. The Indians from whom the county was named were the *pai* — "people" of the *yava* or *yama* "land of big rocks," and any one who knows the Granite Rocks and Dells near Prescott, the rocks of the Red Rock country, the Tonto Basin, and the Mogollon Buttes, and the even more wonderful rocks of the Monument Valley region far to the north, near the Utah line, will realize the full significance of the name. In those days Yavapai County was largely a terra-incognita. In its borders were the Grand Canyon, Havasupai Canyon, the Little Colorado Canyon, the Canyon de Chelly, Monument, Del Muerto, Oak Creek, Walnut, Diablo and other scenic canyons; cliff- and cave-dwellings galore; Hopi, Navaho, Wallapai, Havasupai, Tonto-Apache, Mohave-Apache, and other Indians; with the towering San Francisco Mountains, Mounts Bill Wil-

liams, Kendricks, Sitgreaves, and many other peaks and ranges of dominating grandeur and sublimity; the Painted Desert, and more marvels and wonders than any other similar area, I venture to affirm, than can be found elsewhere on earth.

Pared down though it now is to a small part of its former size it is still a great domain, larger than the State of New Jersey, and though Prescott is no longer the capital city, as it was from 1864 to 1867, and again from 1877 to 1889, when the capital was permanently removed to Phœnix, it is now growing by the sheer force of its own inherent advantages. Though not on either of the direct main or transcontinental lines, it is reached easily from either the Southern Pacific on the south, by way of Maricopa and Phœnix, or the Santa Fe on the north from Ash Fork, the line from this latter station to Phœnix, being a branch of the Santa Fe.

Yavapai County is the home, too, of the great United Verde mines, largely owned by former Senator W. A. Clark, the richest copper property in the world, and several other large mines of scarcely less renown for richness and profitable operation.

Prescott is essentially a mountain city. Though encircled by peaks that soar into the heavens, it practically stands on a mountain top, for its elevation is 5347 feet above the sea. Born of the gold and silver found in these mountains, fostered by the near presence of Fort Whipple, which was established to care for its pioneer miners, and protect them from the too bold attacks of hostile Indians, its emblem should be the pick and shovel, gold pan, sluice-box, Long-Tom, arrastra and tailing-dumps. It was the richness of its mines that led to a considerable population; the great forest of pine trees surrounding it, and the dense growth of grass that covers the

mesas that suggested its being named the first capital of the Territory, for the close proximity of good forage, abundant timber, pure water, and rich mines made it a most desirable location, and the Territorial bill as finally passed by Congress left the Governor free to locate the capital by proclamation. The town was named Prescott, after the greatest of the romantic school of historians, thus clearly indicating that even the hard-headed miners and the unromantic politicians recognized they were in a country that was essentially a land of romance. The warfare between Prescott and Tucson as the seat of the capital was a long-sustained and fierce one, and might have continued until this day had not a new city sprung up upon which later comers compromised, and Phœnix was made the new and stable capital.

But Prescott grew as its mines developed. Yavapai, the largest of the four counties into which Arizona was first divided, possessed the richest placer mines of Arizona and Prescott was made the county seat. Year after year Walker Creek (Lynx Creek it is now called), and the Weaver District poured out their rich treasure of gold dust and nuggets. In 1873 the output was known to be over $100,000.

What years these were, too, of conflicts with the Indians! If a true and full history of this period could be written, we should hear of many horrible conflicts between small bands, or even isolated prospectors, and Apaches, Wallapais, and a few Mohaves, for in spite of the close proximity of Fort Whipple, the troops could not guard every man who was determined to find gold in the mountains. Many a government scout turned prospector, and as the placer mines gave out, rich leads of gold, silver, and copper were found and quartz mining became active. Then vast deposits of silver were discov-

ered, and Prescott became almost another Virginia City. Thousands crowded the city and covered the hillsides. Veins of solid silver were found almost on the surface, and a great boom sprang into existence. In 1880 Yavapai County's output of silver was upwards of $300,000, and in 1883 it was nearly three times that, with growing promises of larger things in the near future.

Yet there were no railroads. Smelters and mills of the crudest type were hauled from the railway terminus in far-away Kansas or came around Cape Horn by steamer to San Francisco, and thence by way of the Gulf of California and the Colorado River to Ehrenburg, and then had to be freighted by mule or ox teams. The charges were so heavy that when erected they had cost more than their weight in solid silver. Sometimes, when "somebody had blundered," they were never even erected, but lay out in the sun, rain, wind and snow, and rusted into ruin. Yet many a mine stood these heavy drains upon their treasuries and men made fortunes.

Then came the great slump in the prices of silver and copper, and prospectors and miners alike turned their attention to gold. But gold ores were refractory and had to be smelted, and smelters were not built on promises. The first gold ores of Arizona were freighted to the Colorado River and went down that stream and around Cape Horn in sailing vessels, and then across the Atlantic to Swansea in the far-away British Isles, and were smelted there — something near twenty thousand miles from mine to furnace.

Many millions of dollars were taken out of the properties in the Congress, Octave, Crown King, Lick Hill, Chaparral and Prescott districts. Numerous circumstances, the chief of which was the impossibility of handling the complex ore to advantage in spite of their

richness, resulted in the closing down of most of these properties, so that at the beginning of 1916, practically the only big profit-earning property in the county was the United Verde Copper mines, at Jerome, owned by Senator W. A. Clark, which up to January of 1917, had paid out in the neighborhood of $45,000,000 in dividends, and had certainly produced more than $160,000,000 of ore.

Early in 1916 the United Verde Extension, which had been in the progress of development for twenty-four years opened up an ore body that was wonderfully rich in copper. Before a year had passed the management had developed the fact that it was probably the richest copper mine that the world has ever known, and early in 1917, the enormous quantity of rich ore had warranted the management in starting the construction of a $2,500,000 smelter and the laying of the plans for a railroad running down the Verde Valley connecting Clarkdale with Phœnix.

Early in 1916, the Copper Chief mine, also in the Verde district, came into the list of profit earners.

The proving up of the enormous value of the United Verde Extension resulted in the centering upon Jerome the interest of investors all over the world. As a consequence, early in 1917, there were twenty-two companies doing actual mining development in that district, with several more financed and ready to begin, and the pay roll had reached the figure of approximately $500,000 monthly.

During this time, the properties of the Consolidated Arizona Smelting Company at Humboldt, which had been in the course of development for a great many years, was also brought into the list of profit earners. The high price of copper, resulting from the European

war, enabled the management to increase the volume of ores handled by its smelter more than tenfold. While the smelter turned out 160,000 pounds of ore per month in 1913, the output for December, 1916, was 1,700,000 pounds.

At Crown King the fact was developed that the oil flotation process would enable the complex ores of those mines to be worked to advantage. This resulted in the building of a big mill capable of handling one hundred and fifty tons of ore per day by the Bradshaw Reduction Company, after they had found that they could work the tailings of the old Crown King mill and get a profit of $4.00 per ton from the tailings alone. At Mayer the Stoddard mines put in a mill with capacity of one hundred tons per day and entered the list of profit earners. Several other mines also became producers in the same district.

A number of the old mines in the neighborhood of Octave and Congress were able to secure the money necessary to proceed with their development. In the southern part of Yavapai County is a very rich mine — the Monte Cristo, owned by a few individuals who have opened up an enormous tonnage of smelting ore and have determined the fact that their ore body, below the 1,000 foot level, is underlaid by a great mass of copper ore. Before the year is over they will have a smelter installed.

In the extreme western part of the county where Burro Creek divides Mohave County from Yavapai County is the center of exploration work by the Lewisohn interests that by the time this book is issued will very probably mean the building of a branch railroad north from the Parker cut-off, or south from the Santa Fe main line, and the building of a new town of several thousand inhabitants.

The visitor to the Prescott of to-day finds an active, bustling, progressive mining, cattle-raising, and agricultural community, with practically everything that goes to make up what is meant by the words "Modern City." Those who laid it out saw that the streets were wide and well-graded. Though wonderfully improved since Capt. John G. Bourke's time, his description of it is well worth reading to-day. He said:

"A few words should be spoken in praise of a community which of all those on the south-western frontier preserved the distinction of being thoroughly American. Prescott was not merely picturesque in location and dainty in appearance, with all its homes neatly painted and surrounded with paling fences and supplied with windows after the American style — it was a village transplanted bodily from the center of the Delaware, the Mohawk, or the Connecticut Valley. The inhabitants were American; American men had brought American wives out with them from their old homes in the far East, and these American wives had not forgotten the lessons of elegance and thrift learned in their childhood. . . .

The Apaches had been fully as active in the neighborhood of Prescott as they had been in that of Tucson, and to this day such names as 'The Burnt Ranch' — a point four miles to the northwest of the town — commemorate attacks and massacres by the Indians. The mail rider had several times been 'corralled' at the Point of Rocks, very close to the town, and all of this portion of Arizona had groaned under the depredations not of the Apaches alone, but the Navahos, Wallapais, and Apache-Mohaves, and now and then of the Chemehuevis, a small band of thieves of Paiuti stock, living in the Grand Canyon of the Colorado. . . .

Fort Whipple, the name of the military post within one mile of the town, was a ramshackle, tumble-down palisade of unbarked pine logs hewn from the adjacent slopes; it was supposed to 'command' something, exactly what, I do not remember, as it was so dilapidated that every time the wind rose we were afraid that the palisade was doomed. The quarters for both the officers and men were also log houses."

Like so many western cities, Prescott has had its great fire. In 1902 most of the business houses were wiped out of existence in a single night. But this was not an

unmixed evil. Before the smoke had cleared away, men who had suffered the loss of great stocks of merchandise were doing business in tents set along the plaza, and before the ruins were cool, the débris was being cleared away and material for new buildings unloaded on the ground. There was a spirit of rivalry as to who should put up the handsomest buildings, and the city rose out of the ashes with new and larger beauty and went on her way as the business and mining center of the north.

But just as, in Crook's day, the homes of Prescott demanded attention, so it is to-day. It is still a city of homes. Mining-men, cattle-men, sheep-men, as well as the professional and business men, have made of it a most charming place of residence.

Undoubtedly climate, and its immediate and further-away surroundings have had much to do with this, together, of course, with the business advantages that it affords. Unlike Phœnix, Tucson, or any of the southern cities of the State, Prescott has a definite and distinctive winter climate, a real, old-fashioned, snowy climate, with this difference, when compared with the winter climate found in the north, middle west, or east of the United States, that here the atmosphere is almost free from moisture. There are none of the moisture-laden winds from the Gulf of Mexico, or the reeking bottom-lands of the Middle West. This low relative humidity makes the cold of winter and the heat of summer less noticeable. Pure, desert air from the high plateau country is all that comes. The atmosphere is so clear that the term "pellucid" properly applies to it. The altitude lessens atmospheric radiation that, at lower levels, intensifies the heat when the thermometer gets above ninety degrees. It also produces a rapid throwing off of heat from the earth as soon as the sun begins to decline, so

that the hottest days of summer are followed by nights of delicious coolness. The whole country, too, is outside of the path of storm movement in the United States. Being on the western slope of the Rockies it is shut away from the storms from the north and the east. It has never known the killing blizzards, terrific windstorms, extremely cold winters, and distressing summer sandstorms that so often disturb other and less favored regions.

The winds that blow over Prescott, no matter in which direction they come, have passed over the great purifying laboratories of the desert that stretch out on each side for hundreds of miles. The surrounding mountains cool these winds and thus they add a factor of health and comfort instead of distress. In the winter months of November to February rain falls but little, not more than an inch and a half per month, while there is a maximum of sunshine. The heavy rains come in the summer months, July and August, and these clothe the mountains and valleys with great forests of pine trees, rich grasses and exquisitely beautiful flowers, so that it would be no misnomer to call Prescott the Mountain City of Pines and Flowers.

There is frost as well as snow in winter, but it is dry — as I have before explained, and as a rule, the sun shines every day. The result is that it is no uncommon thing to see men going about in January — the coldest winter month — in the middle of the day in their shirt sleeves, and women wearing the garments of summer, though when night comes they put on their furs.

Artists rave over the glory of the clouds of Arizona, and nowhere are they more marvellous in their attractiveness than around Prescott.

The result is that Prescott is already becoming the

great health center of the West, as the Adirondack Mountains of New York are of the East. While it cannot be questioned that many sufferers from tuberculosis and other diseases of the lungs and throat recover in the pure air of the lower levels, all the great authorities agree that the excessive heat of summer is injurious and the cold of a dry, winter climate is exceedingly beneficial. The result has been the establishment of several sanatoriums, located on the heights above Prescott, completely embowered in pine trees, and with incomparable scenic outlooks. Here patients *can sleep out of doors with comfort every night in the year,* thus inhaling, every moment of the twenty-four hours, the health-giving, sun-laden and pine-fragrant air. And just as cold water is most soothing and refreshing to the fevered face, so is this cold, pure air soothing, refreshing and invigorating to the fevered and diseased tissues within the lungs. Indeed, the same conditions that have made the Adirondacks the Mecca of the lung-afflicted of the Eastern States, only *twice or three times multiplied,* exist in Prescott, and in a few short years there will be thousands of perfectly restored former invalids singing its praises all over the United States.

Prescott, too, is wonderfully favored in its scenic roads. There is not one city in a thousand in the United States that has its advantages in this regard. I know whereof I speak. I have ridden hundreds of miles over these roads, on bucking or gentled bronco, in buck-board, in buggy, military ambulances and automobile. Merely to mention the localities, while it awakens no responsive chords in the mind of the unaware, quickens the heart to glorious reminiscences of canyon and forest, mountain peak and thrilling ravine, divides and crests, with outlooks of incomparable beauty, sublimity, and grandeur.

There is the Inner Loop of 25 miles; the Outer Loop of 43 miles; the Murphy Drive of 3½ miles; Government Springs, 8 miles; Tonto Flats, 6 miles; Ash Fork, 63 miles, where one can take in the Cathedral Caves; Grand Canyon by way of either Ash Fork or Williams; Camp Verde, 44 miles; Montezuma's Castle, one of the noted cliff-dwellings of the Southwest, which is a little over three miles beyond Camp Verde, and on the same trip one may visit Stoneman's Lake and the Natural Bridge. Flagstaff, Jerome, Kingman, Seligman, Phœnix, Wickenburg, are other cities, the drives to which are picturesque and varied; then there are Castle Hot Springs, Lee's Lake, Iron Springs, Crook Canyon, Wolf Falls, Granite Dells, and close by, Thumb Butte, a striking monument of rugged rock that towers directly over the city.

Several of the places named above are among the wonderlands for which Arizona is already famous, and which the pages of this book are written to make better known. And the roads over which one passes are remarkable in both engineering and scenery.

Prescott has more romances than those which attach to the Indian raids, her sensational mine discoveries, and her political history. One of her Mayors was the famous "Bucky" O'Neill, cowboy, miner, statesman, orator, promoter, literary man, and soldier. He was one of Roosevelt's able officers during the Cuban Campaign, and lost his life in the charge on San Juan Hill. His friend and great admirer, Solon Borglum, one of the greatest sculptors America has yet produced, needed little urging by the people of Prescott to make a spirited piece of sculpture of O'Neill as a representative rough rider. This he did as a labor of love, the people of Prescott subscribing sufficient to enable a casting in bronze to be made

" BUCKY " O'NEIL MONUMENT, IN THE PLAZA, PRESCOTT, ARIZONA.

Santa Clara County Free Library
San Jose, Calif.

of it. This striking group now occupies an honored position in the city plaza.

This plaza is also the site for the new quarter of a million dollar court-house which Yavapai County is erecting. The original intention was to make it of pressed brick, but the contractor was induced to investigate the granite of Prescott's own mountains with view to its use instead. At first incredulous as to its quality, repeated tests satisfied him that it was of the very highest grade for superior building purposes, and early in 1918 the people of Prescott and the county congratulate themselves that they will possess one of the finest court-houses in the Southwest.

There is another interesting feature in Prescott. Three years ago the Chamber of Commerce secured a fine addition to the residence section of the city, of eighty acres, beautifully situated on the hillside, and covered with pines, which they called Pine Crest. They then advertised that they would give a free lot, to any person, not a resident of Prescott, who would live on it for two years, and who would place a house on it costing at least $350.00. City water, lights and telephones are provided, and the lots are free from city taxes. The idea was to induce people living in the heated valleys of the south to come to Prescott for the enjoyment of its cool summers, and already quite a large number have taken advantage of the offer.

Prescott owns the only "Home for Pioneers" with which I am familiar. There are forty-five or fifty of those who bore the heat and burden of the early days now cared for in their old age in this State-endowed home, — a practical refutation, as far as Arizona is concerned, of the aphorism that republics are ungrateful.

The Northern Arizona Fair, too, has been located per-

manently at Prescott. It owns its own grounds and buildings and has already become quite an institution. It was the seeing of the wonderful riding of outlaw and other difficult and bucking broncos at one of these Fairs that led Harold Bell Wright to locate the opening scenes of his *When a Man's a Man* in Prescott.

The State also has one of its Experimental Farms located a few miles from the city to give to the farmers of this part of the country practical help in meeting the problems of horticulture and agriculture in this region. Farmers who come from other parts of our great country find conditions here entirely different from those with which they are familiar, hence the Experimental Farm is doing an eminently practical work in showing them how to meet and successfully overcome the difficulties they are bound to contend with.

Thus it will be seen that Prescott is wide awake, active and progressive. Climatically, scenically and socially it is eminently fitted to be a home city, and a place for health seekers, and the investor has already found it to be the center of one of the most profitable mining regions of the world.

CHAPTER XXVI

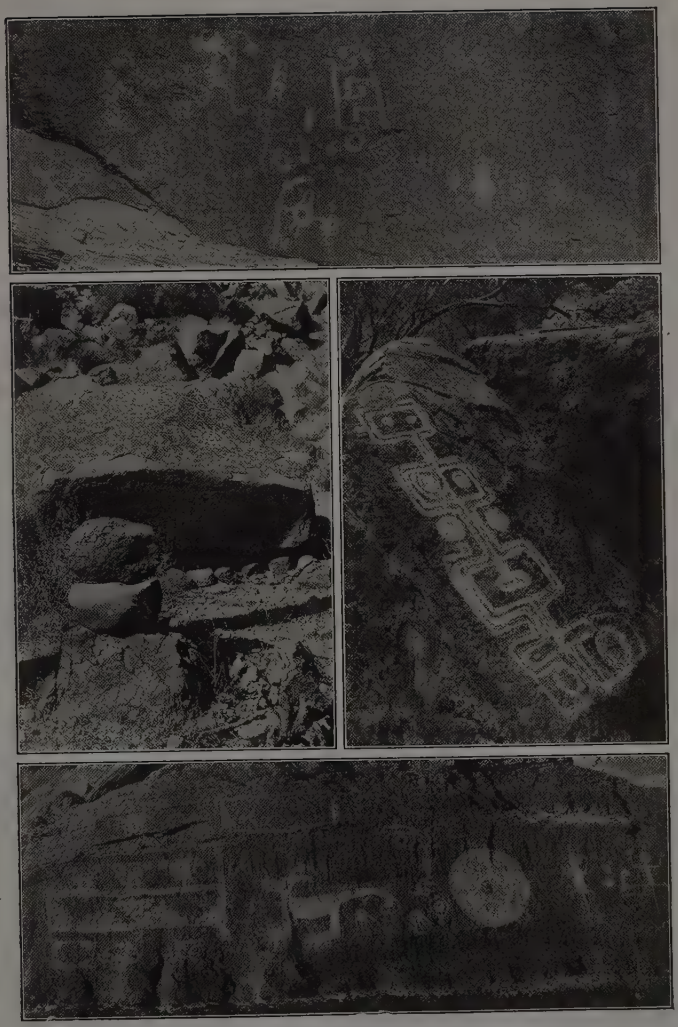
WICKENBURG — THE CITY OF THE HASSAYAMPA

NEAR where the Hassayampa River breaks out from its tortuous course down through the mountains and spreads to the broad desert plains lies Wickenburg, one of the oldest towns in Arizona, fifty-four miles northwest of Phœnix and prominent in the history of the State since the late 50's, at one time having missed being the capital of the State by only a few votes. It is at the junction point of the Santa Fe's north and south and California lines and a place of much importance to the railroads, transacting an unusual volume of business. While there are a number of ranches up and down the river, where the ranchers avail themselves of the rich bottom lands of the canyon, the greatest assets of the town and the district in which it lies are its wonderful climate and the mineral riches of the surrounding mountains.

Situated at an elevation of two thousand one hundred feet above sea level, it escapes the intense heat of the southern deserts and still is low enough to be free from the winter's cold and rarified air of the greater altitudes, resulting in a mild, equable climate the year around that makes it an ideal resort for those afflicted with pulmonary, asthmatic and nervous troubles. There are many hundreds of people scattered over the world to-day who are enjoying life fully restored by a remedial sojourn in its pure, dry atmosphere. Preparations are now being made for the building of an adequate sanatorium for the

accommodation of the many hundreds who annually seek health here. It is a live town and its people are progressive. Its well-graded streets, pleasant homes and well-furnished stores make it a desirable residence spot. A municipal water system supplies the town with the purest of water, filtered through miles of natural sand filter, and a municipal lighting system will soon provide electric lights for both streets and homes. It is the trading center for a wide district and a busy place at all times, having churches, good schools, a commodious opera house, bank, public library and most of the attributes of the larger cities, with a happy freedom from their undesirable features. The attractions of the town are not solely confined to the commercial side of life, for there is much to attract those seeking amusement and the curious. Within a few miles are prehistoric fortifications, hieroglyphic and picture rocks, the *zanjas,* or irrigation ditches, of the tribes of long ago, the canyons breaking out onto the desert plains where the grey blends into the purples, and the varied flora and fauna that await every turn. The surrounding country is a wonderland to the dwellers of other States, for every new vista opens a charm that is individual.

The mineral riches of the district are varied and abundant. Platinum, gold, silver, copper, tungsten, molybdenum, vanadium, manganese and many of the rarer metals are found, but most of the mining at present is confined to gold, silver, copper and molybdenum in its wulfenite form. The most famous of its mines is the Vulture, located a few miles south of the city and indissolubly connected with the earlier history of Arizona. Indian raids, murders, incited by the lust for gold, and all the romance of the frontier are so linked also with its history that a chronicle of the first thirty years, from



VARIOUS INSCRIPTIONS AND PICTURE WRITINGS MADE BY THE PREHISTORIC INDIANS OF ARIZONA.

its discovery in 1863, would make a volume by itself. The mine was discovered by Henry Wickenburg (who gave his name to the town), while out hunting horses which had strayed. At first it was but a pile of rugged outcroppings crowning a low mound on the desert plain, but has now been sunk to over twelve hundred feet below the surface and is reputed to have produced upwards of ten millions of dollars, some estimates rising as high as twenty-seven millions. Miss Hall says the ore was "so rich that the Mexican workmen smuggled out hundreds of dollars every month in bits of quartz concealed in their clothing and shoes," and McClintock says: "Miners became wealthy by simply bringing away pockets or lunch cans full of gold quartz." No matter the exact amount, the mine has been a wonderful producer, and doubtless has many millions yet in its maw for those who will seek. Its history has been varied, its ore first being hauled to the Hassayampa River where it was reduced by arrastras. Later, at different periods, two mills were built, one at Seymour and another at Smith's Mill on the Hassayampa. Still later another mill was built at Wickenburg where the great dump of many thousands of tons of tailings may yet be seen. Finally a mill was built at the mine and the water pumped to it from the Hassayampa. Then wells were sunk at the mine and ever since the ore has been reduced there.

Another notable mine is the Monte Cristo, a few miles to the northeast, and now down over a thousand feet in the bowels of the earth. Its many thousands of feet of shafts, tunnels, cross-cuts and drifts have exposed practically unlimited ore of silver and copper. The Oro Grande mine, four miles north along the Hassayampa, has over a million tons of gold ore blocked out ready for the mill. To the southwest are the great fields of man-

ganese, including thousands of acres. To the north is the famous Congress mine, which has penetrated the rocks by its main shaft to a depth of four thousand three hundred feet. And so the list might go on, naming the famous Rich Hill, with its tales of marvellous wealth, much of it picked by hand from the surface of the ground in the early days, covering a field that, in spite of the work done and the riches taken out, is still virgin and of untold possibilities for those who seek the ravishment of Mother Earth.

At Wickenburg is located the plant of the Arizona Sampling & Reduction Company. This is a most interesting plant and means the making of mines from many small prospects, for here the small producer may bring his output — a sackful or a carload. Received at the bin it is reduced, sampled by automatic machinery, assayed at the company's laboratory and the producer sent away happy in the possession of a check representing his values, or the ore is returned to him for private shipment if he so desires. Besides the sampling machinery, the plant is equipped to treat the ores by concentration, amalgamation, or the flotation process, and arrangements are now being made to install a cyanide process. The plant is well patronized and is an important feature of the town and a strong factor in the development of the district from a mining standpoint.

The source of the town's water supply is the Hassayampa River, the banks of which the town guards. This river is one of the most famous of the West and wherever Arizona is known so is the river. The origin of the name is Wallapai, or Yavapai, and is made up from *Ha-ha,* water: *Yama,* big rocks; *Pa,* place of: the river of the place of big rocks. It is a small stream except when the melting snows or the summer rains send

it on a rampage. Yet the Arizona Society in California calls itself the Hassayampa Society and Arizonans everywhere are proud to be called Hassayampas.

And yet the term implies a doubt as to one's capacity to speak the truth. The reason for that doubt is clear. It was on the Hassayampa that, in early days, the ore from the Vulture mine was taken to be worked in ancient Spanish arrastras. When men went from the mines and the arrastras into the growing towns or settlements near by, and later into Prescott, they bragged, as men often do, of the richness of the mines they were working. What Miss Hall says truthfully of the Vulture mine was enough to lead them to brag, and as these men had the ore, or nuggets, or dust, to justify their bragging they generally "got away with it." But the jealous and less prosperous of other mines and localities took it out of the braggarts. "He's a Hassayampa"— or, in other words, a braggart, a liar. The expression stuck, has never been forgotten, and has now gone into history and will forever remain as the popular state-name for an Arizonan.

Later arrivals appearing on the scene and hearing the general assertion that a Hassayampa could never speak the truth, assumed that this was an old Spanish or Mexican legend, hence the following lines:

"There's a legend centuries old,
By the early Spaniards told,
Of a sparkling stream that lies
Under Arizona skies.
Hassayampa is its name,
And the title to its fame
Is a wondrous quality
Known today from sea to sea.
Those who drink its waters bright—
Red man, white man, boor or knight,

Girls or women, boys or men —
Never tell the truth again."

But there is another and far more beautiful legend of the Hassayampa River. It must be recognized by all that its waters, except during the muddy flood times, are clear, cold, and pure. A local poet has expressed the legend in the following creditable lines:

"Beside the Hassayampa's brink,
Below the crossing, paused to drink
One who beheld as in a dream,
Ere yet he quaffed the crystal stream.
A beautous sprite which warned:
'Beware!'

"This rill so clear is fraught with care;
No noble thought can cross your mind,
If here relief from thirst you find;
If from the sparkling tide you sip,
No truth can pass your faltering lip.
But seek above, for there indeed
The spell is changed. Allay your need
From that charmed draught; no ill can flow.

"No purpose false, no motive low,
For virtue, honor, there control,
And truth resistless fills the soul,
And whoso drinks that nectar rare
And breathes that free, inspiring air
Is thrilled with love that never dies
For Arizona's undimmed skies;
And though he wander far and roam
Beyond the borderland of home,
His heart is never stilled, or knows
Peace or contentment or repose
Till fortune guides his steps once more
Towards Hassayampa's golden shore."

CHAPTER XXVII

COCONINO COUNTY AND FLAGSTAFF

Coconino County is one of the vast slices pared off in the early days of Arizona's history from Yavapai County — the mother of Arizona counties. Imagine an area as large as all Vermont and all Massachusetts, with little Rhode Island thrown in — an area across which the Grand Canyon is cut in all its sublime glory, an area in which stands in solemn majesty one of the most, if not *the most,* beautiful and inviting mountain cluster in the United States — the San Francisco range, 12,611 feet above sea level — this is Coconino County.

In this county is Sunset Crater, and the vast lava-fields, which with their outlying connections are far larger and more wonderful than the classic lava flows of southern France; in these are found wonderful ice-caves, and in prehistoric times Indians made their cave-dwellings in holes which they found almost ready-made for the purpose. Near by are deep clefts in the earth locally known as Bottomless Pits, made by the flowing of the acid-charged waters which disintegrated the limestone and washed it away to deeper depths, and a few miles further on one's pathway is barred by another deep gash in the earth — Walnut Canyon — in which are many of the earliest cliff-dwellings made accessible to tourists in this country of cliff-dwellings. To the east is Black Mountain, from which one can carry away a million tons of disintegrated lava that, to the eye of the unitiated, appears exactly like coarse gunpowder; and still

further is Canyon Diablo — the Canyon of the Devil — doubtless so called by the early day pioneers, who, with their slow going ox-teams, felt it was an invention of the devil to retard their progress to the " glorious land of Californy " to which they were hastening as fast as their plodding oxen would take them. Slightly to the east and south of Canyon Diablo is Meteorite Mountain — it, Sunset Crater, and the Lava Fields having already been described in another chapter. To the north is the Painted Desert, these Lava Fields, Black Mountain and the rest being but outposts or sentinels, as it were, to the land of the vivid color beyond. In the Painted Desert, swimming like ocean birds in the blue of the pure Arizona atmosphere, are the Mogollon Buttes, remarkable basalt figures that tower 10,000 feet or more into the air. Yonder, a little north and east, is the noted Spanish province of Tusayan — the home of the Hopi Indians, whose marvellous Snake Dance has attracted savants and curious sight-seers from all quarters of the globe. Not far from this region of marvels is the Navaho Reservation with its Monument Valley, where are rocky towers and temples that dwarf into insignificance the figures of the Garden of the Gods and Monument Park in Colorado. Within a few miles is Sagi Canyon in which are found Betatakin and Kitsiel, those astounding cliff-dwellings first seen by a white man less than a couple of decades ago. Here, too, close by as distances are reckoned in this country of big distances, is Navaho Mountain. This peak is just over the boundary line of Coconino County, in Utah, and it overlooks what is commonly known as the Four Corners. This is the place where Utah, Colorado, New Mexico and Arizona meet. Here is a radius of the wildest, most rugged, most tumbled, rocky waste in the United States, an area half as large

as the State of New York that *no white man has yet explored, or even prospected.* A few have seen it, fewer still have skirted its wild edges, half a hundred, perhaps, have dared to cross it, and one-tenth of that number have made strenuous endeavor to find out a little more of its marvels. Why go to Asia, or to the heights of the Himalayas, or the Andes of the South, when here are places that challenge the strength, the power, the endurance of the explorer? And it is a region of color, too, that surpasses the most extravagant endeavor of either writer or painter to portray. A La Farge, a Reid, a Moran, a Turner, a Tintoretto, a Titian, a Velasquez aided by all the more and most daring of the modern painters of the greatest of schools might suggest its color extravagances, but even though the artist were to paint it ever so well there isn't a person in the world who would believe it meant anything real — so why imagine the artists attempting it?

In the eastern part of the county the Little Colorado River flows, coming down from the far-away White Mountains, its course beautifully lined with giant willows and cottonwoods until it reaches Grand Falls, where it descends one hundred and twenty-five feet over the solid cliffs, four hundred feet wide, and soon thereafter enters a narrow, deep and abysmal canyon ere it unites with the water of the main Colorado River.

On and near the Little Colorado many cliff-dwellings and other ruins have been found; indeed, these have been made the subject of a monograph by Dr. J. W. Fewkes, of the Smithsonian Institution, and many scores of fine pieces of prehistoric pottery now adorn the shelves and cases of the National and other museums collected from this region.

Working around to the southeast one passes bridges

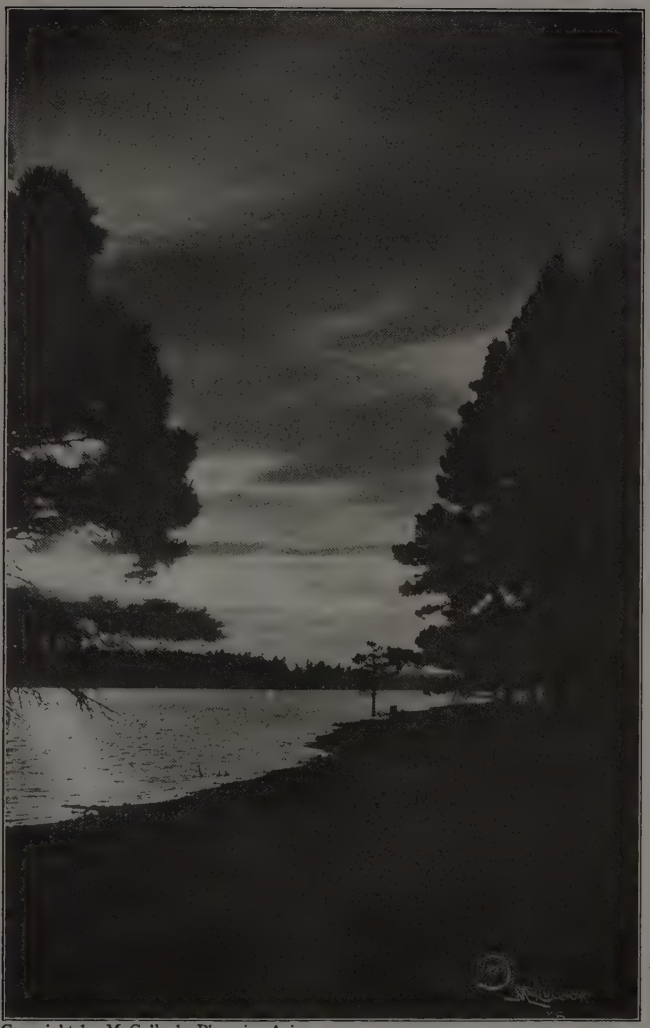
which have recently been constructed — and nine miles south of Flagstaff Lake Mary is reached, a beautiful camping and fishing rendezvous in the heart of the pines. Still further to the south one drops over the rim of the Mogollon Plateau and finds himself in Oak Creek, where trout abound to the delight of the fisherman.

Twenty-three miles from Flagstaff, to the southeast, is Mormon Lake, a fine body of water five miles long and three miles wide.

In the next chapter, devoted to Williams, many more interesting facts about Coconino County are related, which have supplied the scientist and novelist with more material than, perhaps, any other similar sized area in the world. Within the borders of Coconino County Capt. Clarence Dutton gained the major part of the material incorporated in his *Tertiary History of the Grand Canyon District,* a heavy and ponderous tome, which, however, contains some of the most vivid and enchanting prose-poems of powerful description in the English language; here Major Powell gained much material for his writings on Indians and Cliff- and Cave-dwellings, and his trip through the "Canyons of the Colorado" naturally brought him directly across Coconino County. The great biologist, C. Hart Merriam, wrote one of his earliest and most treasured monographs on *The Biology of the San Francisco Mountain Region,* and to this day this fascinating account is referred to and quoted liberally.

While the experts of the Forestry Service have found the trees of the county a worthy subject for a large and illuminating monograph, Professor F. L. Noble came and studied the Grand Canyon, in the region of the Bass Trail, and wrote his interesting bulletin entitled: *The Shinumo Quadrangle,* Grand Canyon District, Arizona.

One of the professors of the Geological Survey spent



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LAKE MARY, NEAR FLAGSTAFF, ARIZONA.

some time in the Petrified Forest and has written much and learnedly upon the *Fossil Forests of Arizona.* Many scientists, also, have been interested and have written much about the wonderful Meteorite Mountain referred to in another chapter, and almost the entire portion of a large folio volume was devoted by Dr. Jesse Walter Fewkes to the Cliff-Dwellings and open ruins of the Little Colorado River region, most, if not all, of which, are in Coconino County.

Nor is this all: Betatakin and Kitsiel — the great Cliff-Dwellings of the Navaho Reservation — have a special bulletin devoted to them written by Dr. Fewkes, and Dr. Byron Cummings, the eminent archæologist of the University of Arizona, has a monograph ready for publication upon these interesting memorials of the past.

Then when one thinks of the scientific monographs of the U. S. Bureau of Ethnology upon the Hopis and their ceremonies, and the Navahos and their equally interesting dances and other ceremonies, together with the monographs issued by the Field Columbian Museum of Chicago, written by Professor George A. Dorsey, and the Rev. H. R. Voth; of Marah Ellis Ryan's remarkable *Love Letters of an Indian,* in which a white woman seeks to penetrate into the mysteries of a Hopi Indian's heart experiences, and with flashes of intuition and insight and a rare literary delicacy presents them to her readers, and in addition considers the numberless magazine and newspaper articles upon the Indians, their varied ceremonials, their life, their industries, their social customs, etc., the list becomes considerably enlarged.

Then it must be noted that the pages written by Charles F. Lummis and others, in *The Land of Sunshine* and *Out West,* devoted to Coconino County alone, would fill a good-sized book.

In addition there are the novels of Zane Grey, half a dozen of them, referring to the region of, or contiguous to, Coconino County, and all of which are well worth reading. Especially worthy of note is his *Last of the Great Plainsmen,*— the story of Buffalo Jones's experiences on the Kaibab Plateau, on the northern rim of the Grand Canyon, giving thrilling and exciting adventures lassoing unusually large and ferocious mountain lions in the tall timber and among the rugged cliffs of that land of tumbling and gigantic rocks. I have overlooked Kirk Munroe's fascinating novel, *The Painted Desert,* and General Charles King's *Sunset Pass,* both dealing with the country either in or very close to Coconino County.

What, then, does this recital mean? Nothing more than that Coconino County has been the inspiration for a large literature, and that fact alone reveals its fascination, interest and allurement to the traveler, sight-seer, and scientist.

The chief city of Coconino County is Flagstaff. This is on the main line of the Santa Fé transcontinental line, six thousand nine hundred and eighty-seven feet above sea level, and so located that its citizens have the most wonderful views daily of the great San Francisco peaks that overshadow it. I have watched these mountains in the early morning hours from the west when they were a deep maroon, shaded here and there with the snow which had a softening, lace-like effect. The ridges in front were a deep greenish black, the color becoming more intense, until the sun burst over the mountain's shoulder and flooded the whole scene with its vivid morning light. Then, through the day, I have watched change after change, until, an hour before sunset, the eyes were dazzled by the glory, beauty and sublimity of the scene, the

sun finally setting in a blaze of gold and scarlet, leaving maroons, lakes, pinks, reds, and grays upon the peaks behind.

Climatically, Flagstaff is highly favored. Owing to its close proximity to the mountains it is never excessively hot in summer. In winter it has a decided winter climate, ranging from warm to cold. At times snow falls heavily, giving that real dash of winter feeling that stimulates one to activity and vigor. In the summer months it is especially adapted as a pleasure resort, its elevation, its coolness, its glorious pines, its bodies of water and excellent fishing combining attractions not dreamed of by those who only know Arizona of the south.

The perfection of its atmosphere may well be understood from the fact that when the eminent astronomer, Percival Lowell, was looking for a site for his astronomical observatory to follow up his remarkable studies of Mars, he finally chose the crest just overlooking Flagstaff. There all his important telescopic observations and photographs of Mars were made that have led to so much discussion throughout the astronomical world, and attracted the attention of all astronomers to Arizona and its pine-clad city of Flagstaff.

Then, too, when it was decided to establish a State Normal School for the northern portion of Arizona, Flagstaff was unanimously chosen as the natural location, and one has but to see the healthy, vigorous, robust young men and women now taking their courses here to realize that the choice has been perfectly justified. A more ruggedly healthy set of students it has never been my privilege to see.

Located on the National Old Trails Highway, it is essentially the pictorial and scenic route between the East and the West. When Lieutenant Beale crossed the con-

tinent from Galveston, Texas, with his herd of camels, just prior to Civil War times, it was over the 35th parallel, the one practically followed by the Santa Fe Railway to-day. One might write many pages of romantic fact about this interesting and almost forgotten page in the history of American transportation, when Jefferson Davis, the Secretary of War for the Federal government, was induced to experiment with camels as beasts of burden for use over the desert areas of the West. In every way the camels proved satisfactory as carriers. They were able to bear heavy loads and to travel long distances between sun up and sun set, but there were two serious objections to them: First. They ate so much that it was impossible to carry food for them, so they were turned loose at night to forage for themselves. When their drivers sought them in the morning they found the camels had traveled such great distances that the day was gone ere they were able to capture them and return to their starting points. Then, second, they so dreadfully scared the mules of the rest of the train that they would run away, scatter the contents of their peaks over the desert, and generally cause demoralization on every hand. Hence the experiment was denounced as a failure, and Lieutenant Beale was sent with the camels to see if they could not be used somehow on the Pacific Coast. The same objections held here, and the animals were finally sold or turned loose, a solitary creature even to-day now and then being seen by hunters in the remoter corners of the Colorado Desert.

Travelers, therefore, whether riding on the trains or coming in their own automobiles are on an historic and famous road. And at Flagstaff they find a suitable radiating spot for a large number of the wonders of our marvellous Arizona. The chief drawback is that Flag-

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BIRD'S-EYE VIEW OF NATURAL BRIDGE, VERDE VALLEY, ARIZONA.

staff has no first-class tourist hotel, and until this great need is supplied the city must naturally suffer. Yet those who are prepared to care for themselves should not fail to enjoy what this region affords. For instance, who can resist the temptation to ascend the San Francisco peaks? One may drive half of the eleven miles to the summit, and then ride or climb the rest of the way. On the summit, on a clear day,— and most days are clear here — one sees two hundred miles in every direction, to the far-away Buckskin Mountains of the Kaibab Plateau, north of the Grand Canyon, over the Lava Fields to the Painted Desert of the east, into the Tonto Basin and Red Rock country and the Verde Valley to the south and southwest, while to the west are the wonderful miles of pine-trees, comprising the greatest untouched yellow pine forest in the United States.

Nine miles to the east are the Cave-dwellings, where the ancestors of the Havasupai Indians used to live, and from which innumerable prehistoric implements and pieces of pottery have been taken. On the second arm of the triangle one drives ten miles to Walnut Canyon, where the Cliff-dwellings are, passing the Bottomless Pits on the way, and then ten miles completes the journey by returning to Flagstaff.

Oak Creek — a most delightful resort for camping, fishing and hunting — is but twenty miles away, while forty-five miles brings one over the fine state highway, to that prehistoric Cliff-dwelling, Montezuma's Castle, and another equally interesting phenomenon, Montezuma's Well, both of which are fully described elsewhere.

Twenty miles to the southeast is the famous Natural Bridge of Arizona. This was discovered by Dave Gowan in 1873. He built a small shack there, cleared

off some land and planted a number of fruit trees. According to Garth W. Gates, in *Arizona*:

"For twenty-five years the whereabouts of Gowan were unknown to his Scottish relatives, when one day in the early nineties Mr. Goodfellow read in his copy of the *Newcastle Chronicle* a story by a British traveler about a remarkable natural bridge in far-off Arizona and of the old Scotchman who lived there. Thinking it might be the long-lost uncle, he wrote. Months afterward came the reply and sure enough, the Gowan of the story was the wandering kinsman. Anxious to get back to his old life of prospecting, Gowan finally prevailed on his nephew to take his young wife and three little children and make the 6000-mile trip by steamer, rail, wagon and horseback that led from the quiet little Scottish home to the wild mountain spot that seemingly offered so little.

Some day there will be a book written about Dave Gowan, his adventures as a sea captain, later as pioneer Arizonan sheep-raiser and prospector, of his work in beginning the development of the little ranch at the bridge, of the Goodfellows, of how they came, of what they did. There will be a chapter about the winding trail over which the burros hauled down a board or two at a time for the little buildings that were put up before the road was blasted out. There will be chapters about the remarkable orchard, the delicious apples, pears, apricots, peaches, flavored perfectly by the mile-high climate. There will be a chapter on the old-fashioned vegetable garden, and, best of all, the old-fashioned flower beds with the hundreds of big velvety butterflies that add another lovely touch to the fairyland nature of the place. And the meals that Mrs. Goodfellow prepares are famous from Roosevelt to Flagstaff, and for a wonder are really as good as we were told they would be."

One of the Government scientists thus describes the bridge and its origin:

"The vertical distance from the top of the bridge to the creek bed is about one hundred and twenty-eight feet on the north and one hundred and fifty feet on the south end. The opening beneath the bridge averages about one hundred and forty feet in width, and the length at the narrowest place, approximately four hundred feet. The thickness of the arch is approximately seventy-five feet, leaving the height of the opening beneath the arch between sixty and seventy feet. The altitude of the bridge above the sea level is approximately four thousand seven hundred feet. The origin of the bridge is as follows:

"Several large springs that flow into the valley from the east side contain lime in solution, which, upon evaporation or loss of carbon dioxide, is deposited as travertine. For many years these springs have been depositing travertine in an old valley of erosion cut into red porphyry. As a result of this an almost level floor of travertine of approximately the same height as the springs increased in width toward the west, filling the valley until it has forced the stream against the porphyry wall on the west side. In one place the travertine was strong enough to support itself, until it was built over the stream to the opposite side of the valley, thus forming a natural bridge. The rock of which the bridge is composed is stalactitic in structure and quite compact. Beneath the arch of the bridge are several caves of considerable extent, from the roof of which hang stalactites and from the floor of which stalagmites arise. These caves are reached from below by ladders which have been erected by Mr. Goodfellow, the owner of the bridge.

"The extent of the terrace above and including the bridge, is about twenty-five acres, and is covered with a good soil which is irrigated from the springs and produces abundant crops of fruit and alfalfa. A small portion of the north end of the cultivated tract is apparently not underlaid with travertine, but is formed by sediment carried in by a small stream."

Again to quote Mr. Gates:

"The first glimpse one gets from the hilltop of the little emerald gem of a ranch hundreds of feet below is as thrilling as it is beautiful, and its charm grows as one learns the story of the bridge, the farm and the road that winds so invitingly around the big hills. Of the twenty-five acres in cultivation over four are right on top of the bridge, and one walks through the alfalfa and a fine old vineyard on the way to the trail that leads down into the canyon and under the arch, and unless the guide has told you, the fact that you are walking on the bridge is never suspected, for it's too big to be seen from the top."

Flagstaff is also the natural outfitting or starting point for the Painted Desert, the Navaho Reservation, and the Hopis. Thousands of people have already seen the Hopi Snake Dance, and hundreds of thousands will yet wish to do so, as they cross the continent. On the way to the Hopi village one may go by way of Leupp, crossing the

Little Colorado River on the new $45,000 bridge now being built by the Indian Department, and where a school for the education of the Navahos is in active operation. Here about one hundred and thirty of these young Bedouins of the Painted Desert may be seen, absorbing the knowledge of the white man, and at the same time the interested visitor may see the Navahos in their summer or winter hogans, weaving their remarkable blankets, or, if one is fortunate enough to strike them at the proper time, he may see their wonderful dances. Few people dream of the fascination and thrilling entrancement of, for instance, the Navaho's Fire Dance. To see twenty, thirty naked aborigines dancing around a flaming fire of burning coals giving out so fierce a heat that an ordinary spectator must stand fifty or more feet away to be able to bear it and yet to see these natives reach down and light wands that they are carrying in their hands—these are astounding facts that one can scarcely believe. Then, when this unbelievable thing has been done, they take large handfuls of cedar bark, set fire to them, and chase each other, until one is caught and then sponge him down with the flaming brands, and one doubts whether he is not hypnotized into imagining that he sees things that do not exist. Yet a reference to the Fifth Annual Report of the United States Bureau of Ethnology, page 442, will reveal that what I have written here is the serious and sober truth.

So, too, with the Hopi Snake Dance. Several of my own trips to see this wondrous ceremonial have been started from Flagstaff. This dance has been so often described that to attempt it again here would be a work of supererogation. Yet no description can ever equal the reality, and no American should deem his education upon his own country complete until he has seen it. Else-

where in these pages a very brief and condensed account of the dance will be found.

Flagstaff has long lacked a first-class tourist hotel, but just as this book is going to press the agreeable announcement is made that two of Flagstaff's most solid citizens, David Babbitt and T. A. Riordan, are about to supply the need. Plans have been made and arrangements completed for the erection of a four-storied, reinforced concrete structure, with white marble cement facing, to occupy the quarter block of one of the finest streets in the city. There are to be seventy-five rooms, each with individual bath, and the hotel will be the most complete in northern Arizona.

A theatre capable of seating four hundred people will be part of the same structure, so that two great needs of this thriving community will be met at the same time.

To the west of Flagstaff, eight miles away, is Fort Moroni, a fortress built by the Mormons to defend themselves from the Apaches, when, in 1880, they were on the warpath. The Mormons had a contract to cut ties for the new railroad, the Atlantic and Pacific — as the Santa Fe was then known. Everything seemed to be at peace until the report came to them that the Apaches were killing every white man and woman they could find. Immediately consternation reigned, and the Mormons gathered together, retreated to this spot, built the fort, and remained within or near its shelter until all danger was past. This was the last raid the Apaches ever made to the north.

It was about this time that Lieut. Charles King, now general, was seriously wounded at Sunset Crossing, some fifty miles or so east of Flagstaff, and the story of which he graphically tells in one of his novels.

The principal industries of Coconino County are cattle,

sheep, and lumber. Over 100,000 cattle and 300,000 sheep are now roaming the ranges and day by day adding wealth for their owners.

A feature of the cattle industry is now being made available for the entertainment of tourists. Every August and September there occurs the annual round-up, where the cattle are gathered in from the ranges, sorted, branded, and disposed of at the will of their owners. This is a sight for a life-time, and under proper guidance can be seen by everybody who is willing to drive out into the cattle country. With such a guide as my old friend Al. Doyle, of Flagstaff, women may go with perfect confidence, assured that they will see one of the most fascinating and thrilling sights of their lives.

The largest part of Coconino County is within the Coconino National Forest, and from the trees of this forest come the logs that keep the two great lumber mills of Flagstaff, as well as three others, in active operation. The first and largest of these mills was started and operated for several years by Edward E. Ayer, who was afterwards associated with Marshall Field in the establishment of the Field Columbian Museum, of Chicago, of which he was the president for several years.

The five mills, the other three of which are located at Williams, Riordan and Cliffs, are now cutting 350,000 feet of lumber *a day*.

CHAPTER XXVIII

WILLIAMS AND THE ROMANTIC CANYON OF THE HAVASU

The casual traveler, riding through Arizona on a railway train, oftentimes passes through most romantic and fascinating regions, but because of his want of knowledge, he regards the land as dull and uninteresting. Yet no one with an eye for beauty could regard the town of Williams in this light. Built on the shoulders of Bill Williams Mountain, at an elevation of six thousand seven hundred and eighty feet above sea level; the foothills and mountain slopes covered with pines; with a wonderful outlook over the great prehistoric inland sea to the very rim of the Grand Canyon; with mountains from eight thousand to nearly thirteen thousand feet elevation meeting the eye to the east, south and west; Nature has done much to make the town attractive.

It will be noticed that the mountain bears the name "Bill Williams." This was given in honor of one of the most famous and noted of the early day Western trappers and scouts. While not quite as well known today as Kit Carson, in his day he was even more famous than the man who accompanied Frémont on so many of his path-finding journeys. The life-story of Williams is one of fascination and interest, and would compare favorably in its statement of simple facts with any of the wildest romances written by the most imaginative of our novelists. The mountain itself has a peculiarly rounded summit, and the chief of its two peaks is nine thousand

two hundred feet above the sea. That it is connected with the volcanic upheavals that have made such marked impressions upon northern Arizona is evidenced by the presence of a great basaltic pillar or "chimney," well below the summit, and clearly to be seen from the Santa Fe Railway as the trains wind around towards Ash Fork.

For years a good trail has given visitors the opportunity of riding to the summit of this glorious peak, and the making of a fine automobile road to the mountain's topmost height is not an impossibility in the near future. The distance from Williams to the summit by trail is only about five miles and the ascent can easily be made on foot or with saddle-horse any time between May first and November first. It is such a delightful and accessible side-trip that no visitor to Williams during the summer should miss the opportunity. To those who are fond of more vigorous exercise, a climb on snow-shoes or skis to the mountain's peak during the winter season will afford a day's sport never to be forgotten. The view from the summit is incomparable. Let the imaginative reader conceive of the most comprehensive survey his traveled eyes have ever allowed him to view, and I venture the assertion that nowhere in the United States can he find a more widely expansive view than this will afford.

For a short distance after leaving Williams the trail passes over a wooded mesa strewn with volcanic rock, thrown out ages ago from this long extinct volcano. Then one passes up a wild and rugged canyon through the shaded glens of a true forest primeval. Far overhead tower the giant pines and firs, whose sombre shades are enlivened by an occasional grove of quaking aspen. In the fall, after the first frosts, the foliage of this cheerful little tree paints the mountain slopes with patches of brilliant yellow, in beautiful contrast to the soft, dark green

of the pine and fir. Finally one leaves the canyon to pass through a mountain meadow and after another short ascent the lofty summit is reached.

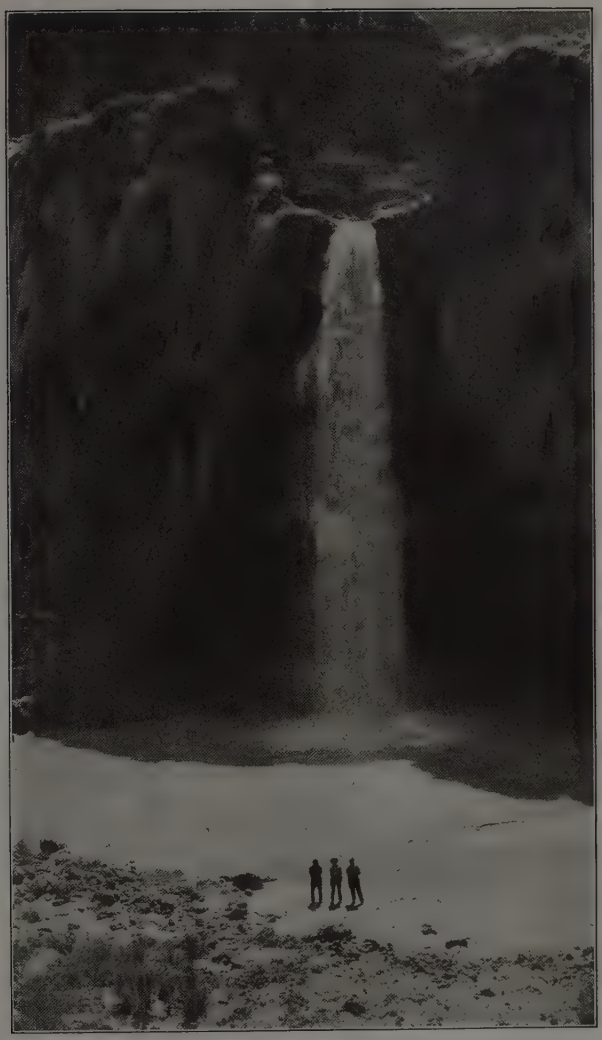
Imagine standing upon a mountain top, a mile and three-quarters above sea level, and then looking out over a varied panorama, with practically unrestricted vision over a radius of two hundred miles. It is bewildering in its sublimity, awe-inspiring in its stupendous majesty and uplifting in its impressive glory. To the south one looks over the famous Verde Valley, where Jerome and Clarkdale are located, the home of Senator Clark's wonderful copper mine, and where the largest copper smelter in the world is in operation. This whole valley used to be infested with Apache Indians, and many of General Crook's most famous fights and parleys with the Indians were held here. It was the home of many thousands of Cliff-dwellers, for in Sycamore Canyon alone — a miniature Grand Canyon — with narrow walls two thousand feet high, whose colors are even more striking than those of the great gorge itself, there are scores of these dwellings that few have ever seen. Here, too, in this same canyon, a great fight occurred between Apaches and Uncle Sam's soldiers, in which the soldiers were ambushed and slain, save one, who escaped to bring the tale to his horror-stricken general. Stories like this that Arizonans know are true give the lie to the preconceived idea that Indians are not good fighters. The headstones placed over the graves of some of these soldiers are still to be seen, and the place bears the name, Battle Ridge.

Now let the eye swing around to the west. Here is the great Chino Valley, which extends for miles west and north, and finally leads one directly over the Wallapai Mountains and Kingman, by Oatman, the most recent

boom mining-camp of Arizona, and Mattatiwiddati Canyon — the Garden of Eden of the Wallapai Indians — to the south rim of the Grand Canyon itself, a sweep of country half as large as the whole State of New York.

Then the Grand Canyon! That is due north. Glimpses of the greatest gorge known to man are had for miles, the north wall towering over a thousand feet above the south wall, and revealing, in its shadows and brilliant colors, the work that the forces of erosion have accomplished in the thousands of years of its making. Near to it is the home of that strange tribe of Indians, the Havasupais. They live in a canyon thirty-five hundred feet or thereabouts below the level of the surrounding plateaus. Look! At our feet, quite close to the town of Williams, we can see flowing water. This is the head, or beginning, of Cataract Creek. Cataract Creek flows in a winding, tortuous way for a number of miles, then disappears — one of the many strange streams of this State of wonders. One cannot conceive where it has gone, until, in the heart of Havasu Canyon — which used to be called Cataract Canyon — after one has gone down a ten- or twelve-mile trail, glimpsing more stupendous wonders than most people see in a lifetime, there, to his never-to-be-forgotten surprise, the lost stream comes to life again in a thousand springs that bubble up out of the apparently solid sandstone rocks, at the base of a cliff over two thousand feet high. Uniting, they form the Havasu,— *Haha,* water; *vasu,* blue; the Blue Water — of the Havasupai, *pai* signifying people.

The village of this interesting tribe begins here, and the canyon varies in width from a few hundred feet to a quarter of a mile, through the center of which the Havasu flows. The stream is lined with such a profusion of rank willow growth, that Lieutenant Cushing, who came



MOONEY FALLS, IN HAVASU (CATARACT) CANYON.
Reached from Williams, Arizona.

to visit these people from far-away Zuni, forty or more years ago, called them "The Nation of the Willows." Here, in this secluded spot, nearly thirty-five hundred feet below the plateau, this primitive people grow their melons, beans, pumpkins, squash, onions and chili; have their peach and fig orchards, and raise such wonderful crops that they have even been able to win the first prizes at the State's Annual Horticultural Fair. The reason is clear. In their secluded canyon they have no winter, the rocky walls act as radiators of the sun's rays day and night, for they store the heat during the day and give it off during the night, so that the whole canyon is one vast nature-planned hot-house or conservatory, and the Indians have learned to take advantage of it.

Let the eye now come back to the slope of the mountain before which we stand. We are ensconced in the shelter built by the United States Forest Service as a lookout in connection with its organized scheme of protection against forest fires. With powerful glasses the vigilant officer stationed here seeks to discover and locate forest fires ere they become disastrous, for, among other things, Williams is a great lumber-making town, and the forests on the great plateau where Williams is situated supply trainloads of logs daily for a modern saw-mill, which turns out over thirty million feet of lumber a year. Yonder is the plant to the west of the town. Here the great logs are snaked upon the carriage and then handled as easily as toothpicks, whirled this way and that, rushed backward and forward, the bark ripped off, the planks sawed, the whole operation requiring not more than three or four minutes. Then, after the lumber has duly seasoned, much of it is removed to the box factory near by. Here it is turned into dry goods, shoe and other packing boxes, which are sent east to the very shores of the At-

lantic; boxes for meat, vegetables, and fruit, which go by the carload to the great meat and fruit packers; and it is not so long since one may have seen a couple of carloads of fruit-boxes consigned to the Cecil Rhodes Fruit Farm, South Africa. Many thousands of feet of mining timbers are sent from here for the great mines of Arizona, and other carloads go to the Great Lakes States, to be converted into doors and windows, and other factory uses. Hence the forests that supply the raw material for this profitable industry, which supports many of the families of Williams, are well worth watching and guarding.

And not only is the lumber industry of great importance in the region around Williams. On the Tusayan National Forest, in which the town is situated, there graze, under Forest Service regulation, some twenty-five thousand head of cattle and horses, and over seventy thousand sheep. The income derived by the Government from the sale of its timber and the fees charged for the grazing of stock on this National Forest, and from the leasing of its lands, etc., has amounted to over $50,000 per year for the past several years. To offset the loss in taxes through these lands being held in Government ownership, each year about one-half of the gross receipts are returned by Uncle Sam to the State and county for the development of roads and schools.

In these great forests the hunter finds himself constantly busy. Deer and wild turkeys abound, though they are growing shy as civilization encroaches upon them. Mountain lion, bear, and wild-cats are not infrequently seen in the furthermost recesses, which, however, are easily accessible to the hunter who goes out from Williams on horseback. In the lower country, not far from town, the blue California quail is found in large convoys, and the cottontails are so frequently seen that

the hunter soon tires of shooting them. The lions, bears, wild cats, coyotes and cottontails are not protected by law, but for hunting other game a license is required and can be secured from local officers.

To the east stands that peerless monarch of Arizona's mountains, the San Francisco range, with its three peaks, Humphreys, Agassiz, and Frémont, towering nearly thirteen thousand feet into the pure turquoise blue of the sky. This is one of the most perfectly formed mountains in the United States, and seen from every direction is always beautiful as well as impressive. Swinging off to the north a little, one sees Red Butte, known by the Havasupai Indians as *Hue-ga-da-wi-za,* the Mountain of the Clenched Fist, while the San Francisco peaks are known as *Hue-han-a-patch-a,* the Mountain of the Virgin Snow. Now, turning a little south of east, one's eyes fall upon the Tonto Basin, the scene of one of the great conflicts between the cattle and sheep men of the State, now happily made impossible by the control of all the government owned ranges by the Forest Service.

As we return down the trail our eyes are charmed and our senses constantly titillated by the odors of the rich carpet of flowers the mountain slope possesses. Elsewhere I have spoken of the wealth of Arizona's flowers, and nowhere is a greater variety to be found than here.

The city of Williams itself bears evidence of recent progress. It has a good water and light system, and little by little is putting on cosmopolitan airs. As the population increases modern necessities and luxuries naturally follow. But to those who prefer health, the freedom of the open spaces, close communion with quiet mountains, ready and easy access to some of the greatest natural marvels of the world, and a climate that compels one to robustness, vigor, and the joy of life, more than

the extraneous refinements and debilitating luxuries of the larger cities, Williams makes an especial appeal. How well do I remember bringing a New York millionaire to ride over the great plain between Williams and the Grand Canyon. He had been suffering from hemorrhages, and his physician had sent him West to me. I taught him the joy and vigor that come from sleeping out of doors; I compelled him to work, walk, or ride ere he could eat; I showed him the difference between a life of false and temporary pleasure and the life of real delight that comes from vigorous health, and after a few months in the open air, eating, walking, riding, working, sleeping, and seldom entering a house, I sent him back to a life of new energy and happiness as the result.

When I think of the people of the East, North, and Middle West, sweltering in the humid heat of their summers, I am compelled to thank God for the privilege I have enjoyed for so many years of breathing the mountain and pine-laden air of this region. And I often wonder why the inhabitants of the southern part of Arizona, who, in the summer months, flee to the cooling breezes of the beach towns of the Pacific Ocean, do not come up here around Williams for their holiday refreshment. There are wonderful places for camping-out in the great pine forests and parks, where there is everything to delight the eye, strengthen the body, feed the mind, and give enjoyment to the most varied demands of one's nature.

As a health resort for those who are suffering from anemia, neurasthenia, or the dangerous beginnings of throat, bronchial, or lung troubles, every word I have written of the region around Prescott perfectly applies here. Climatically, the two regions have much in common.

Naturally a progressive town like Williams has good churches, schools, newspapers, a woman's club, a man's association for the development of the town and its environments, movie picture shows, garages, and hotels. In the Fray Marcos, one of the Fred Harvey system of hotels, the exacting traveler, whether by train or automobile, is assured the best of accommodations, and there are other less pretentious stopping places for those who desire them.

Williams is the center of very large cattle and sheep interests, some of the best stocked and managed cattle ranches of the State having their headquarters here. The placing of all the public or open ranges under the control of the United States Forest Service has forever eliminated the deadly feuds that used to rage between the cattle and sheep owners. Each places his stock on allotted ranges, uses such water as is provided, contracted for, or owned, and the two long-antagonistic interests now find they can work together in a state closely bordering upon harmony.

To the traveler passing through Arizona in June or October, nothing could be more interesting of its kind, than for him to see a real, genuine, old-fashioned cowboy rodeo, or round-up. To climb on to a genuine cowpony, ride out with the boys after stock, "ride herd" at night, help in, or watch, the processes of "cutting out," branding, etc., and then to partake in real cowboy fashion of the food, when "cookie" yells "Take it away!" or "Grub pile!" after which to sit around the camp-fire listening to yarns of wild rides, outlaw horses, great feats of bronco breaking, or adventures on mountain or plain, or in forest or canyon, and then to stretch out in one's blankets under the stars — these are experiences that can be enjoyed if one is willing to go to the trouble

to make arrangements beforehand. Needless is it for me to say that one enjoying such an experience has been singularly fortunate.

For a summer camping-place Williams is especially well-equipped. At Coleman Lake, eight miles away over a good automobile road, one may enjoy a summer camping vacation to the full, whether *en famille* or alone. Here tents may be put up under the pines; automobiles parked in natural garages under the trees; the children can romp, climb, row, swing, fish, pick flowers, rocks, or study the different trees, while their elders can bring in a daily string of black bass, or a wild turkey or deer in season, to help out the commissary department. This lake is in the Tusayan National Forest, and the camping facilities, sanitary arrangements, etc., are all under Government supervision and direction. A portion of the shore line is to be leased for summer cottage rights, and camping privileges are open to all.

Another delightful camping-out resort will ere long be developed in Sycamore Canyon, already referred to. Of course the self-dependent have been camping there already for years, and few spots in Arizona are more historically romantic, ruggedly wild, grandly picturesque, and yet pastorally attractive. After an eighteen-mile ride one reaches the rim of this miniature Grand Canyon. It is here in the neighborhood of six miles wide and two thousand feet deep. The canyon really heads in the San Francisco Mountains and runs its tortuous and winding way for about thirty miles, where it joins the Verde River. The road strikes it about midway of its length. Here one takes the trail to the bottom. This trail is about a mile and a half long, and it passes through a forest of beautiful trees that grow straight and about twenty feet tall, with a shiny bark almost like the manzanita, a

(UPPER) COLEMAN LAKE, NEAR WILLIAMS, ARIZONA. (LOWER) CAMPING UNDER THE PINES AT COLEMAN LAKE, NEAR WILLIAMS, ARIZONA.

nut about as large as a walnut, and a leaf like the western juniper. In the walls of this canyon hundreds of cliff-dwellings may be seen and on some of the salient points are buildings that appear to be fortresses, or buildings erected for defense. There are several forms of prehistoric dwellings in this region that are different from those found elsewhere in the State, and their origin and purpose are still considered a great mystery. At one point, seven or eight miles before reaching the Verde River, three giant sandstone rocks stand out somewhat detached from the main wall, and on the summit of these dwellings can be discerned, though he would be a daring climber who, to-day, would attempt to reach them. On nearly all the rocky-shelves where the cliff-dwellings are found, rock pockets for the holding of water for a few days are to be found. Some of the dwellings have been excavated and arrow points, spearheads, stone-axes, ropes made of the fibre of the bear grass, or amole, sandals, ears of corn, etc., have been collected.

In the canyon, too, are quite a number of peculiar structures built of the chips of sandstone found at the foot of the cliffs. They are from four to six feet wide, and four feet high, covered with solid stone, and containing nothing but charcoal (undoubtedly made from the trees of the valley), and a ball of peculiar-looking clay, in their center. The significance and purpose of these pits are not understood.

It was in this canyon, too, that an ambuscade of soldiers took place by a band of Apaches. The latter appeared to be running from the soldiers, and led them up into the heart of the canyon; there the Indians doubled upon the soldiers, some standing their ground, while others climbed out of the canyon and flanked the soldiers, falling upon them with deadly effect in the rear. Battle

Ridge, where this massacre occurred, leads down to Cow Flat. The fight is said to have taken place in the late 'seventies.

The charm and beauty, as well as the rugged picturesqueness of this canyon, cannot be overestimated. It is ideal for a summer's vacation. Fruit and vegetables of every kind can be secured from Sycamore Ranch, at the mouth of Sycamore Canyon. There is no doubt that in time a trip to this canyon will become one of the most popular in Arizona, for it is so easily reached from Williams.

Another interesting place for a day's visit from Williams is Cathedral Cave. In an automobile ride of thirty-four miles over a fine road, one reaches this cave, now visited annually by thousands of people. Passing through the small entrance one finds a vast chamber, with numbers of stalactites and stalagmites, of infinite variety of shape and size. It is a beautiful and entrancing sight.

Another wonderful trip that is regularly taken during the summer and fall months from Williams is the ride to the rim of the Grand Canyon and back. This circuit covers one hundred and thirty miles, and is easily made in the day.

But an auto ride and trip that ere long will be one of the most popular in the whole of the Western world is one that is now planned by the Williams garages. One rides out to the head of the Wallapai or Hopi trails that lead down into Havasu (Cataract) Canyon, before described. The head of both of these trails is now accessible to the automobile. Here Indian ponies and guides can be secured — arrangements, of course, must be made before leaving Williams — and the descent made into the canyon. The ride itself is unspeakably grand, thrilling, and sublime. Captain Bourke, who went into Havasu Canyon

with General Crook, thus describes one of the trails as it was in those earlier days before modern engineering skill had made the descent comparatively easy:

> There is a trail descending the Cataract Canyon so narrow and dangerous that pack trains rarely get to the bottom without accidents. When I went down there with General Crook we could hear the tinkling of the pack train bell far up in the cliffs above us, while the mules looked like mice, then like rats, then like jack-rabbits, and finally like dogs in size. One poor mule was pushed off the trail by another mule crowding up against it and was hurled over the precipice and dashed into pulp on the rocks a thousand feet below.

This trail, called by the Havasupais the *Pack-a-the-true-ye-ba* Trail, is never used by the whites, indeed is practically unknown to them, though the other three trails are thrilling and exciting enough even to the most blasé of travelers.

The canyon itself, when the descent of the trail has been made, is full of fascinations and wonders, for mile after mile, each fresh turn reveals some new and striking feature of the rocky walls, some hideous gargoyle, some fantastic carving of wind, storm, rain, or sand, some giant toad-stool threateningly overhanging the trail, a thousand feet above. Then when one reaches the place where the springs rush forth and make Havasu Creek, and he sees the homes of the Indians, and can get glimpses of their religious life as are afforded during their annual *Thapala,* or Peach Dance, when they thank the gods for their rich harvests, or in their weekly *toholwoh,* or sweat bath; or can hear their " Stories of the Old " told by one of their medicine-men; then, indeed, he begins to understand some of the glamour felt by all who have ever visited this interesting tribe. But this is not all that Havasu Canyon affords. On the heights of a cliff near the agency is the old fort of the Havasupais, where they used

to flee for refuge from attacks of the Apaches, and many a story have I heard of the fierce and desperate fights that have taken place here. On the other side of the canyon, on the top of a twenty-five hundred foot high cliff, and accessible only by a trail known to the leaders of the tribe, is their emergency storage-house, where, in the olden days of danger and constant menace, they used to keep a supply of corn and other dried grains, seeds, and vegetables and fruits sufficient to last them for three years. Then below the village one comes in succession to Havasu, Navaho, Bridal Veil, Mooney, and Beaver Falls, five of the most enchantingly beautiful waterfalls of the West.

Havasu Canyon is indeed the home of romance, past and present, of scenic glories of the most rugged and the most picturesque character, and he who fails to visit it, when opportunity affords, deprives himself of one of the most entrancing trips the American continent affords.

These are a few of the most interesting attractions awaiting the visitor to Williams. If he desires a hospitable climate and is a lover of all that is grand and sublime in nature, he will find much to satisfy his desires in and around this little town, so favorably situated in the mountain and forest region of northern Arizona.

CHAPTER XXIX

COCHISE COUNTY

EACH year Arizona is making more and more insistent demands upon the educated, the traveled, and the wealthier classes of the United States. No longer can an intelligent man speak of barren, arid, desolate Arizona, and refer to it as the land of cowboys and unrestrained lawlessness. It is a new and great state in the making, and, in some portions, its progress is more than interesting, it is marvelous, and well worth more than mere passing attention. To the thousands of trans-continental travelers, therefore, who pass through with scant interest and slight attention, I cry "Halt! You are missing something worth while. On your next trip plan a few stop-overs at certain spots, and I venture the assertion that you will find it greatly to your profit and satisfaction."

For instance, you are coming into Arizona on the Golden State Limited. This brings you via El Paso and soon after you pass into the State of Arizona, from New Mexico, you enter Cochise County, and reach the city of Douglas. Now look around you; the depot is as modern and beautiful as any in New York State, in New England, or the Middle West. You see a first-class, well-kept hotel, a structure that would not be insignificant in Chicago, St. Louis, Boston or New York, and where the interior appointments and service are equal to what one is used to in every first-class hotel in the world. Ride around the city. It is well-laid

out, and modern in every particular. All the streets are wide, and most of them perfectly paved, and kept in spotless condition. The business blocks are as good as can be found in any city of the East with ten times its population, and there are churches, a fine library, theaters, public baths, club-houses, golf-links, etc., justified by the fine residence section where scores of beautiful and well-appointed and environed homes line the streets for many blocks.

It is the same if one comes into Arizona over the Southern Pacific railway. At Bowie and Willcox, one is in the heart of the country so graphically pictured by Stewart Edward White in his *Arizona Night's Entertainments*. Here stock of fine breed roam the hills and valleys, feeding on the richest natural grasses known, and pasture on fenced fields of alfalfa and other beef producing fodder. These towns, though small, are rapidly growing and their foundations are being securely built. Churches, school- and home-life are dominant. The saloon and gambling-hall are gone. Not a single note of wild revelry is now heard from one year's end to another. But the great spaces are here — one feels the exuberant freedom of plains and mountains. The spirit that must have animated the old Apaches and given them their indomitable energy and courage still remains, and one feels stimulated by the ozone of the air that comes down, cool and pure, from the eleven thousand feet high summits of the Chiricahua and Huachuca ranges of mountains nearby. Here one can live in the fullest sense of the word. One feels the thrill and interest of life pictured by the great artist, Remington, though the days of the warfare between Apache and white man are gone forever.

Midway between the cities along these two lines of

railway — the El Paso and Southwestern and the Southern Pacific, both of which completely cross Cochise County — rest Bisbee, Warren, Lowell, Tombstone, Pearce and Kelton. It has a larger population than any other Arizona county, with an assessed valuation so far ahead of all the other counties as to make it the notably wealthy county of the State.

Let us look for a few moments at the details which go to make up this remarkable county. In size it is but ninth in the counties of Arizona, yet it is about as large as the two States of Connecticut and Rhode Island combined, for it has six thousand, one hundred and seventy square miles within its borders. It is a county of valleys and mountains, ranging in elevation from three thousand three hundred feet to eleven thousand feet, a variation from the lower San Pedro Valley to the higher summits of the Chiricahua and Huachuca ranges of seven thousand seven hundred feet — over a thousand feet higher in range-variation than the one dominant peak of all the Eastern States possess — Mt. Washington, with its six thousand and six hundred feet of elevation.

Naturally this range of altitude materially affects the climate, and one can have almost anything he desires here, except the extremes of heat and cold. It is never severely cold, though the winters are bracing and invigorating, and it is never oppressively hot, owing to the cool breezes coming down daily from the mountains tempered by the snow that can be found there during a large part of the year.

From the earliest history of the American in Arizona, what is now Cochise County has been famous as a remarkable mineral belt. Its mines are known from one end of the world to the other. Wherever the English

language is spoken the story of Tombstone has been recounted, again and again, and the rich copper mines of the Bisbee District are now pouring forth millions of pounds of valuable ore annually. Indeed, when it is realized that Arizona to-day produces thirty per cent. of all the copper mined in the United States, and that of this amount forty per cent. is produced in Cochise County alone, it will be seen that one-eighth of all the copper of the United States comes from this one county.

In addition, millions are being taken out annually in gold, silver, tungsten and other precious metals, yet none pretends to assert or believe that the mining industry of the county is further along than in its cradle.

In this county, Romance and Modern Progress are hand and glove. Every valley, foot-hill, canyon and glade has its stories of Indians, and when one enters the streets of Tombstone or Bisbee, or others of the older mining camps, he sees visions of the old prospectors and finds himself listening to the most astounding tales of fabulous wealth "which might have been" and of hair-raising exploits which were, and of white men's struggles against each other which now, thank God, belong to the days that are gone forever.

In addition to these fascinating reminders of the past and evidences of the mining progress of the present, when it is discovered that there lie, separating the pine-clad mountains, the three great agricultural valleys of San Pedro, San Simon, and Sulphur Springs each of them a principality itself where the most active and progressive agricultural developments are going on, one can begin to comprehend what I asserted in the opening paragraphs of this chapter, that the intelligent traveler must no longer pass through this region unaware and unobservant.

Cochise County makes definite and positive claims upon the attention of four classes of people. In one class are the wide-awake, refined, cultured, observant travelers. All such should plan, whether traveling by automobile or rail, to stop over for a few days, at least, in any one of the centers named. Here they will find places redolent of the romance of the past,— the Indians, the old frontier memories, when Arizona was "wild and woolly," as the most vivid and unrestrained imagination has printed it, the gambling dens, the shooting-affrays, when a "man for breakfast" was a common occurrence. Side by side is the romance of the present — the wonderful mining activities; the men going up and down into the mines; the hoisting machinery which brings up its hundreds of thousands of tons of ore; the dumping machinery; the ore trains ceaselessly shuttling back and forth to the smelters; these vast roaring furnaces, which belch forth their columns of smoke above, and pour forth their liquid streams of incandescent metal below; the slag piles where molten rock lights up the night-scene with lurid glare; the picturesque burro-trains, loaded with wood and ore — for there are mines perched in the most inaccessible spots on the mountain slopes, and these are reached only by the plodding sure feet of the patient burro. Then in the valleys one finds the same activities, but manifested in different lines. Rigs are boring for artesian water; modern caterpillar traction-engines are ploughing vast fields; thousands and thousands of acres are being planted to grains, alfalfa and vegetables, and more thousands to hardy fruits — the most delicious peaches, pears, apples, etc.

Then to those who enjoy the modern manifestations of the old cowboy life, there are the annual rodeos — or roundups of cattle from the range, but conducted now

under state regulations, and with as great orderliness as a city school, except that the exuberant freedom of the out-of-door life affects every one with happiness, spontaneity, glorious appetite, perfect digestion, and dreamless sleep. Here one may learn all about "shaps" and "caballos," and horse-wranglers, and mavericks, and the differences between Texan and California saddles, and the ways of the cowboys who use them. Oh, it is a picturesque phase of life, yet, is that of the cowboy, and many a city man — and woman, too,— would lose ennui and neurasthenia and insomnia and a host of the evils that curse our civilization, if they would but get out and enjoy the perfect freedom of a "ride with the cowboys."

But, there are other real pleasures for this class of people. I have referred to the fine hotels. Douglas and Bisbee are already well provided with such. Tombstone is about to build one, and the other towns are preparing to follow suit. There are clubs for men and women, where refined people, who are educated to the highest eastern standards, welcome all accredited visitors, so that all of one's comforts and amusements are adequately provided for. Then there are rides for the automobilist in every direction, as the chapters on Douglas, Bisbee and Tombstone reveal.

A second class that Cochise County claims is that of the health-seeker, whether he be rich or but moderately provided with this world's goods. The conditions of life here are as near perfect for helping one to recover health as they can be found in the world. One finds pure air, cool nights, good water, no great extremes of temperature, so that he can be out of doors day or night, winter and summer alike, with but few exceptions. And for those who must work while regaining their health, there

are many opportunities offered. One can go on a farm, plough, or attend to the care of fruit trees, or ride after cattle — and a hundred and one employments besides lure one out to exercise in the open air, the surest and most simple, natural and inexpensive way back to health.

The third class includes the farmer, the rancher, the cattleman. The whole county is in the earliest stages of its modern development. There are opportunities, galore, for those who wish to "get in on the ground floor."

Of the three large agricultural valleys of Cochise County, the most easterly is the San Simon,— the first town the Southern Pacific trains reach in Arizona being of this same name. This is the principal town of the valley. To the south and slightly to the west is the Chiricahua National Forest, and northeast of the Chiricahua Mountains is located the town of Paradise, where for years fine fruits and vegetables have been grown. Until 1911, however, the major portion of the million acres of this valley, one hundred and twenty-five miles long and from twelve to twenty miles wide, was regarded as arid. Then artesian water was found, and now the upper end of the valley, east and south of Paradise, is well settled, and below the available land is rapidly being taken. There are three methods by which land can be secured, viz.: by purchasing direct from the government by means of scrip; by homesteading; and under the Desert Land Act.

The proved artesian area includes upwards of fifty thousand acres of very fertile land which is rapidly being put under water for cultivation. This proved land has all been entered and much of it patented. Already there are in it upwards of one hundred flowing wells and others are being drilled. The flow varies from one

hundred to six hundred gallons per minute according to location and manner in which the well has been put down.

Surrounding the artesian area there is another area where the water rises to, or very near the surface, and here pumping plants are installed and operated at a minimum of cost. The extent of such area is as yet undetermined but it is certain that in it there is some land that is yet subject to entry. Outside of this second area considerable land that is subject to enlarged entry may be cultivated by dry farming methods, especially adapted for livestock ranches, of which a number have already been established.

The Bowie Valley, to the east of San Simon, for general purposes must be included with the San Simon Valley, and in the past four years there has been great activity here.

The San Pedro Valley lies in southeastern Arizona. It has an average altitude of about three thousand five hundred feet, an average width of twenty miles, and is one hundred and twenty-five miles long. It contains an area of twenty-four thousand square miles and there are fully a million acres of fertile and productive lands. The San Pedro River, which flows through it from its rise in Mexico to where it joins the Gila at Winkelman, affords water for abundant irrigation, when properly conserved. Already two thousand acres of the river bottom lands are now irrigated by gravity water through the Benson canal, and about five thousand acres irrigated by flowing wells and the St. David canal, which is also gravity water from the San Pedro River. Several hundred acres are being irrigated under the private system of the Boquillas Land & Cattle Company, and fully two thousand five hundred acres are being irrigated by small ditch

systems from the San Pedro River north of Benson. This ten thousand acres is being rapidly brought into a high state of cultivation. In addition to these irrigated lands, some two thousand acres of mesa lands are being very successfully cultivated under the dry farming system.

The U. S. Government is now seriously contemplating the conservation of the water of the San Pedro River, near Charleston; and when this plan is consummated most of this great valley can then be irrigated.

The largest and most populous of the valleys of Cochise is the Sulphur Spring Valley, extending from north to south the entire length of the county and beyond its confines, the upper end being located in Graham County, while its lower end runs on down into old Mexico. In width it has an average of more than twenty miles. It comprises an area of about two thousand eight hundred square miles and nearly one thousand square miles of bordering mountainous country shed their waters into it. It has an altitude ranging from five thousand feet on its higher slopes to less than three thousand nine hundred feet at Whitewater Draw, its lowest point. In its southerly end is located the Smelter City of Douglas, while to the north is Willcox, important as a distributing point and as one of the greatest cattle shipping centers of the State.

Less than a decade ago there were not a hundred families engaged in agriculture in the Sulphur Spring Valley. To-day it is dotted from end to end with prosperous ranch homes, its settlers run into the thousands and unappropriated lands are being rapidly filed upon.

Of the cattle industry too much cannot be said. It is one of the quickest and surest ways to reasonable com-

petency for those men who are willing to endure the hard work of riding on the open range.

The ranges on the government reserves are under the control of the Forestry Service, which prevents overstocking, and the industry is now conducted as systematically as street cars are run in any well-ordered American city. The natural grasses that abound in Arizona, as I have shown in the chapter on the Flora, the great flow of pure water from the mountains, and the securing of artesian and other water in the valleys, together with the great growth of alfalfa and other fodder crops suitable for winter feeds, have made the stock industry a pretty safe, and certainly profitable one.

The fourth class that Cochise County appeals to is that of the investor — the man of means and leisure, who seeks to put his money where it will be active in promoting the development of this great country. He can come and watch it grow by directing the operations himself, and while doing so, will add years of health and happiness to his life. For, while I have necessarily gone over the county's resources and natural assets in a cursory and inadequate manner, I have failed utterly in my aim if I have not shown the receptive-minded man that here is a county of great opportunities in a wonderfully varied assortment of fields.

A GROUP OF HOMES, DOUGLAS, ARIZONA.

HIGH SCHOOL, DOUGLAS, ARIZONA.

CHAPTER XXX

DOUGLAS — THE SMELTER CITY OF THE GREAT SOUTHWEST

LOCATED on the main line of the El Paso & Southwestern Railway, close to the Mexican boundary, the first city of any size reached in Arizona, Douglas comes as a decided surprise to the wide-awake and alert American traveler.

Arizona a desert? He here sees modernity on every hand,— a magnificent depot, fine surrounding grounds, automobiles passing up and down broad, well-paved streets which are lined with massive business blocks of architectural pretensions and commercial qualifications of a high order, and a hotel unsurpassed in any city west of Chicago. Douglas at once commends itself, immediately challenges all pre-conceived ideas in regard to Arizona and settles forever the idea that the wild and woolly west is to be found within its confines.

A mile away the giant smoke-stacks of the smelters attract attention to the chief cause of the existence of this highly developed modern city. The mining camps in the mountain canyons did not afford the room, the facilities for building, the readiness of access and the necessary supply of water and fuel for the successful and profitable operation of the smelters. Hence a new location was sought and found on the main line of the E. P. & S. W. Railway, which is owned by the same corporation — the Phelps-Dodge interests — which controls the mines.

The new city really had a great advantage in being thus located by those who scientifically studied out the whole question before coming to a decision. Most Western towns are located by haphazard, by chance. If the location be good, its citizens rejoice; if not, they complain — but in vain. At Douglas, however, the water, drainage, sewerage, and transportation problems and blowing away of the smoke and fumes from the smelters were all settled and solved before the city was located.

Other things also were thoroughly studied, and the wisdom shown is readily discernible now in the fact that Douglas is the natural gateway to the southwest coast of Mexico. The new folders of the Southern Pacific Railway show an extension of their lines from Nacozari to Guaymas and beyond, and when it is known that even today the reports of the United States Treasury Department show that Douglas is second only to El Paso, as a port of entry on the international boundary, it will be evident that when this contemplated extension of railway is completed, Douglas will increase in size with marvellous rapidity. Already it is the most important trading center for northern Sonora. A large amount of the business of its merchants is transacted with the better class of Sonorans, whose reliability and promptness in payment render them the finest kind of customers.

Furthermore, Douglas is on the main trunks of the following transcontinental highways, the Borderland Route, Ocean to Ocean Highway, Old Spanish Trail, Southern Military Highway, Southern National Highway, and the Dixie Overland Highway. Here are six great automobile national and military highways focusing upon one city, with this marvellous advantage over all other route parallels. This is the only one that is open

every day in the year. Here there is no winter, in the way the term is understood on the central or northern transcontinental routes. Snow is seldom seen on the levels. While it may be found on the towering mountain peaks that line the highways, clear across the State, sending down cool and delicious breezes even in the heat of summer and making blankets necessary for comfortable sleeping every night in the year, snow never remains more than a few hours on the level.

When all these highways are in operation Douglas will see a great influx of transcontinental travelers, for it is a city that no one will desire to pass by. All will wish to see its gigantic smelters. Here are a few figures that show their enormous output. From the Copper Queen Smelter, from March to August of 1916, the yield was 84,200,000 pounds. During the same period the Calumet and Arizona yielded 46,800,000 pounds, a total of 131,000,000. At the price of 25 cents per pound, this would give a valuation of $32,000,000. One is simply staggered at the enormity of these figures and the gigantic amount of labor they represent.

The combined smelters have a payroll of about two thousand men, which together with the railroad shops, means a monthly disbursement of over $300,000.00.

The character of the smelter and railroad employees gives to the retailer of Douglas good reason for faith in the future of business conditions. Starting some fifteen years ago, the smelter fires have never been permitted to go out, and as a result have furnished a steady stream of pay checks semi-monthly to the men.

Then, too, when one watches the development of the smelters, realizes that hundreds of thousands of dollars have been expended quite recently in their improvement and enlargement, it is quite evident that the companies

operating them do not look for any diminution of their business operations. Indeed, they are bound to increase. With the introduction of new and much cheaper methods for the reduction of ores, vast quantities of lower grades can be profitably mined. Then, too, with an eye to the future, the smelter companies realize that Mexican troubles cannot last forever, and that to the south of them lies Sonora, the richest of all Mexican States, where millions and millions of dollars' worth of ore are awaiting shipment to the smelters. This will come to Douglas, and not only that, all the supplies, etc., needed for the development of this vast empire must be gained from the United States, and a vast share of it will come from Douglas.

To the north lies the vast Sulphur Spring Valley. As I have shown in the Chapter on Cochise County, this valley is rapidly being developed. Think what this means to Douglas. Fruits, vegetables, berries, ere long will be brought in daily during the season, fresh from the gardens and fields, for the soil is as productive as any in the country. With a cold storage plant these products can be kept until needed. Fresh eggs, poultry, milk, cream and butter will all come from the same immediate source of supply. Hence, it can be seen that the people of Douglas are doing all they possibly can to further the thorough developments of this wonderful agricultural and horticultural area.

Climatically Douglas is ideally situated. Government reports show that its average number of clear days annually leads many of the most noted resorts of the country with two hundred and thirty-three such days. Its average annual rainfall is 14.39 inches, its mean temperature in summer 80 degrees Fahr., and its coldest 45.2 degrees Fahr. At an elevation of nearly four

thousand feet, it possesses all the healthful qualities of a city purified by the aseptic properties of the surrounding sun-kissed plains, with the additional advantage of the cool breezes descending from the mountain heights during the summer.

The traveler, therefore, winter and summer alike, is assured of a hospitable climate and an interesting city at which to stop and rest, not only for a few hours, but for a few days. At the Gadsden Hotel he will be surprised to find himself quartered in a hotel as good as any he has ever visited, though in size not quite so mammoth as those of the great Eastern cities. Every modern luxury and convenience is provided, and in the fine, cool, airy dining-room quiet-footed, skilful waiters bring in food prepared in the most approved styles, and of a variety that satisfies the most exacting taste.

For recreation, the city offers its fine Country Club, modern in every sense, and one's golf sticks can be used here to as great advantage and pleasure as in California or elsewhere.

The magnificent highways suggest rides in many directions. A day can well be spent visiting Bisbee — the Mule Gulch of the early mining days — and seeing the wonderful mines from which ore for Douglas' smelters is obtained. Another day of thrilling fascination may be spent at old Tombstone, where the mine is once again being worked. Still another day of romance and charm will be found in visiting Fort Huachuca, where Uncle Sam now has a large number of his soldiers quartered in the most enchanting mountain surroundings. Then, he who visits Douglas should not fail to go to Miller's Canyon and Cochise's Stronghold (see chapter on Tombstone) and the wonderful Chiricahua Mountains, where less than three decades away, the wild Apache roamed

in his lawless fearlessness, slaying every white man, woman and child with whom he came in contact, but where, to-day, excellent fishing, hunting, botanizing, geologizing, and camping out in the most delectable canyons and forest areas may be enjoyed. The traveler who misses this trip deprives himself of a pleasure he cannot know in any Eastern, Northern, Southern or middle Western country.

These, then, are some of the attractions Douglas offers to the transient. But there are still other considerations to the homeseeker. To charm of location, scientific laying-out, and providing for the needs of the city, abundance of city water, gas and electric light, for lighting, heating and cooking, must be added the finest and most modern schools known. No money has been spared to provide the best there is for the education of the children of Douglas. Over $300,000 have been spent in providing scholastic facilities, and there are eleven grade schools and one high school with an enrollment of three thousand two hundred children, under the guidance of one hundred and one of the best teachers the trustees could hire. One of the schools is devoted to domestic science and another to manual training.

In addition to this, the Copper Queen Consolidated Mining Company, twelve years ago, erected and equipped a fine library which is absolutely at the service of all the citizens and visitors of Douglas without cost.

There are two solid and substantial banks with a capitalization of $200,000; a fine Country Club house and grounds; clubs of all the leading organizations, and seven churches, all of which possess buildings of fine striking architecture and commodious proportions.

Another interesting feature of Douglas is that a few blocks away from the heart of the city, to the south, is

the Mexican city of Agua Prieta. Here one has a splendid opportunity to compare his own civilization with that of the sister republic. Here, too, it was that in November of 1915, the Villistas made an attack upon the Constitutionalists, and the evidences of that fight are still to be seen in 1917.

One result of the recent disturbances in Mexico has been the establishment at all important points on the border of permanent establishments for United States soldiers. Douglas is being fully provided for in this regard, the buildings for the soldiers, in adequate numbers for perfect protection, being now in process of erection. Hence one may come here with the sense of perfect security either for a brief stay or for permanent residence, feeling assured that, in either case, Douglas has much to offer that will satisfy and delight.

CHAPTER XXXI

BISBEE, THE COPPER MINING CITY OF THE SOUTH

WHY they called them the Mule Mountains no one knows, yet it so denominated in the bond — on the United States maps, and when the camp was first located, the settlement that sprang up around it was called Mule Gulch; and near by was Mule Pass. That was in November, 1879. At that time the mountain slopes of the Gulch were lined with oak and other trees, festooned with mistletoe, which presented a very different sight from what they do to-day. There were a few tents and shacks, and in one of them lived George Warren, from whom the town of Warren was named, Marcus A. Hering, D. B. Ray, George Eddleman, and Joe Dyer. These men had located some claims, and had smelted a little of the ore in a primitive smelter built on the spot. As early as August, 1877, however, Jack Dunn had located and recorded a mineral claim in this region, and he it was who induced Warren to go into the Gulch.

From this meager beginning has grown the world-famous mining city of Bisbee, which, in the year 1916, mined in the neighborhood of $57,000,000 worth of ore, and is the home of three of the greatest copper mines in the United States,— the Copper Queen, the Calumet and Arizona and Shattuck. Yet, strange to say, this city is built in the heart of a canyon in the last place in the world that one would have imagined a city could have been established. Quaint and peculiar, it is picturesque in the extreme. The trains of the El Paso and South Western Railway deposit one in the very heart of it.

As one steps out from the depot-platform to the main street he finds it as narrow a spot as Wall Street, New York, where William Street crosses it. Parallel with the railway is one street leading down to Lowell; off at an obtuse angle is Brewery Gulch, directly ahead is an alley-looking opening going up hill to the Copper Queen hotel, and to the left and separated from it by a huge brick building, is another narrow opening and this latter is Main Street, leading up to where it branches, one branch becoming Tombstone Street or Avenue. Crooked as a dog's hind leg, so narrow that you wonder that business can be done at all, the streets have been compelled to follow the natural contours of the mountain. You are really at the head of a canyon, and every available inch of reasonably level ground has been occupied, and then houses and stores, churches and Y. M. C. A., apartment houses and hoisting-works began to climb the mountain slopes on each side and there they are, hanging by the eyebrows, terraced up to the stars.

Up and down the narrow streets automobiles ply in perfect safety. There is prohibition in Arizona, hence there are few, if any, reckless drivers. They have to be careful or a hundred accidents would occur every hour. Side by side with these powerful modern appliances of conveyance a drove of laden burros come, plodding along, patiently bearing their heavy sacks of ore, or carrying firewood or supplies to mines. The next moment a modern, full-sized, powerfully-motored street car comes along, with its full quota of passengers — miners in their working garb, Mexicans with their tall sombreros, ladies of refinement going to their club, and gentlemen interested in mines who have just stopped over while on their way to California, or going back to New York.

Picturesque! It is the streets of Cairo, the bustle of Broadway, the wealth and mental activity of Wall Street, and the primitive simplicity of the mountain mining-camp, all combined in the lesser degree, while towering up on either side are the slopes that lead one's eyes to the very heavens. He who crosses the continent and fails to see Bisbee deprives himself of one of the unique sights of the country. The city of Bisbee with its principal suburbs Lowell, Warren and Don Luis, with several smaller suburbs, occupy only seven miles of surface, and the whole combined area is known as the Warren District. For all practical purposes it is one community, though Bisbee is the only incorporated city, and has no control over the affairs of its sister communities.

If, however, one assumes from what I have written that Bisbee is a rough, rude, frontier mining-camp, he must immediately get rid of this misapprehension. He is taken to the Copper Queen Hotel, built and owned by the great Phelps-Dodge Corporation that owns the mines, the railway from El Paso, the smelters, etc. It is a city hotel,— quite like Chicago or Boston or New York — transplanted bodily to this quaint nook in the heart of the *Mule Mountains*. Jostling elbow to it is a fine, large, architecturally pleasing brick church. Skew-angularly across from this is as fine a Y. W. C. A. building as the country possesses, built as a memorial to Miss Kate Dodge. Still higher up and curved around to the right is a Y. M. C. A. that would be the pride of hundreds of large cities — cities of 100,000 population — in the Middle West, were they fortunate enough to possess it. And so it is whichever way you go. Everywhere you are met with the most striking evidences of modernity and progress, business enterprise and *success*. Here is the great Phelps-Dodge store, where you feel at once

that you are in a gigantic establishment conducted on the same high plane as are those of John Wanamaker in New York and Philadelphia. Across the way is the fine and striking building of the Bank of Bisbee, classic in its outlines, and perfectly adapted for the banking needs of a great city. A few doors above is the Miners and Merchants, the largest single bank in the State.

Whichever way you turn you find Bisbee a city of surprises, of the unexpected. For instance here is Brewery Gulch — yet the city is "bone dry," the once-brewery is now used for a restaurant, and other good and commercial purposes. A little further on, hemmed as the churchyards are in the heart of crowded London, is one of the daintiest, prettiest, and most attractive parks imaginable. It used to be a graveyard, by the way, but a few years ago the progressive citizens of this eagle's eyrie decided to convert it into a park. The necessary steps were taken, voluntary subscriptions solicited, to which the mining and other companies readily and generously responded, the City Council found the balance needed, and at a cost of over $25,000 the place, that had always been an eyesore and a receptacle for all the old tin cans and other trash of the neighborhood, was converted into a beautiful resting place, where in the summer the band discourses sweet music, and everybody comes to enjoy the delicious evening air.

As you ride up Tombstone Canyon a large ecclesiastical-looking building in course of construction demands one's whole attention. Inquiry reveals that it is a Catholic Church, which however, local pride denominates a Cathedral, and insists that ere long it will be the seat of a bishop. It is to cost in the neighborhood of $75,000, yet the grading upon the steep mountain side, the digging

of the foundations, etc., was all done by the generous-hearted miners for the church of their faith, as a gift of love.

In this same canyon a towering rock shoots up directly from the roadside, like a rude monument. It is a wonderful example of the way intrusive rocks are found throughout this formation. Locally it is known as Castle Rock.

As one rides higher up this canyon he sees ahead a road of wide proportions and perfect grade, that climbs to the stars. This is the famous prison-labor-built road of the great Borderland Highway connecting El Paso, Douglas, Bisbee and Tucson with the California Coast. Our powerful car climbs the hill with ease. Soon we leave the street of the city which has climbed along with us to a couple of miles distance from the depot, and now, swinging around to the right we are upon this noted highway. It is a superlative piece of road-building, and whatever fault one may find with Governor Hunt for his determination to enunciate his pet humanitarian theories, one feels that here, at least, he has made good. Prisoners, sentenced to a life of uselessness and brooding at the state penitentiary, were here put to work at a useful and beneficial occupation, a work that means much to the comfort and pleasure of the citizens of, and visitors to, the State, and at the same time gave the state's prisoners healthful outlet for their energies. Miles of this fine highway were built on the way to Tombstone, where the state's prisoners were removed, and the city's prisoners have now taken up the work and are carrying it along to the extreme confines of the city's territory.

A ride over this road is one of the pleasures offered visitors to Bisbee. To those of a romantic and his-

toric turn of mind, however, this quaint mining-camp has several places of especial interest. It is well to recall the fact that in the early 'eighties there were many of the criminal element that purposely came to the active camp of Bisbee, not only because much money was in circulation, but it was near the Mexican border, whither they could flee if their crimes seemed to be bringing upon them merited punishment. In August, 1880, a murder of a Mexican was committed above Castle Rock, the criminal escaped, and this was but one of many similar murders.

In December, 1883, occurred the Bisbee massacre, an event of horror that is often narrated even to this day. On the first of the month five strangers came to the city. They made themselves agreeable and no one suspected them of ulterior motives, but on the evening of the eighth they rode masked, up the Gulch, three of them entering the leading store, the other two remaining outside, as sentinels or guards. While robbing was going on inside, the miscreants outside commanded two men who were passing to throw up their hands and enter the store. These men refused, one rushing into a near-by saloon, the other dashing down the street. Firing at once commenced. The bandits fled, but not until they had killed the deputy sheriff, and an innocent woman bystander who was about to give birth to a child, and two others. A posse was organized, and a courier sent to Tombstone, the county seat, to apprise the sheriff, the ride of twenty-eight miles over the mountains being made on horseback in less than two hours. In about two weeks' time though two of the murderers had escaped into Mexico, the whole five were captured and securely held in the Tombstone jail. With one of the posse was a man named Heith. He was exceedingly solicitous

about catching the bandits, but it was soon observed that whenever the sheriff was anxious to follow a trail that seemed to him to be sure, this man would lead him off in another direction. In due time it was discovered that this man was one of the gang, had undoubtedly planned the "hold-up," and had guided his confederates in their movements. He was arrested and jailed with the others. In due time the five principals were tried and sentenced to be hung. Heith's trial resulted in a judgment that he be imprisoned for life. But the citizens took him from the officers and hung him to a telegraph pole, and on the 28th of March, 1884, the other poor misguided wretches were officially swung into eternity upon a gallows erected in the Tombstone jail yard. The scene of the massacre is still pointed out in Bisbee. These are but samples of the actions of the lawless days. Men were often shot with their boots on, and it seemed incredible that the quiet, orderly, progressive, cultured city of the Bisbee of to-day can be the outcome of the wild camp that it certainly was thirty or more years ago.

Every visitor who has never inspected a mine, should go into one or other of the famous mines of the camp. Permits can always be obtained by reputable visitors. Here may be seen the actual workings, with all the latest modern appliances and inventions. There are literally scores of miles of tunnels, with vast chambers of ore, of wonderful variety and astonishing splendor and beauty of color.

In the Shattuck mine is a cave of vast proportions where stalactites and stalagmites abound. Some of the former are several feet long and the latter assume a multitude of forms. Bunches of white grapes, large and small masses of familiar and unfamiliar shapes attract the eye in every direction. On some portions of the

walls filmy silken threads seem to intermingle with white satin-surfaced ribbons, but all thrown together in inextricable confusion.

After the mines are visited a ride should be taken over the magnificent Borderland Highway, before described, to Tombstone. Another trip is to Ramsay's Canyon in the Huachuca Mountains, where a dashing mountain stream of pure water, a forest of trees and garden of fruits and flowers make a scene that enchants the eyes even of those who are familiar with pictures of wooded beauty.

Mount Huachuca and Miller's Canyon are other interesting spots in the Huachucas, and the hunter or fisherman can enjoy his chosen sport to the uttermost in these desirable regions.

During this time the Copper Queen Hotel affords one a delightful stopping-place to which he returns each night with comfort.

Lowell is in reality an extension of Bisbee, while Warren is the residence section of both. Here there is room enough on the foothills to expand, and many exquisite sites and outlooks are already occupied by fine residences, some of which have cost many thousands of dollars in their erection, and far more in their equipment and furnishing.

To working men of the steadier class — those with families, this district makes an especial appeal. They are needed and welcomed. There are the best of schools for the children, and churches, clubs, etc., for the adults, and as good stores as can be found in any city in the world outside of the great metropolises.

The wages paid are the highest of any camp in the United States, the men and their employers working together for the best interests of each. Over a million

dollars wages a month are now being paid out by the three leading mining companies.

Hence to tourist and pleasure seeker, workingman and investor, Bisbee and the Warren District are peculiarly attractive and should be visited by all who wish to know Arizona as it really is.

CHAPTER XXXII

TOMBSTONE

How do certain towns, cities, or mining-camps become famous easier or readier than others? It is hard to tell! There is a psychology in names that is often as baffling as it is fascinating to study. Tombstone, however, is one of the mining camps of Arizona that seemed to achieve fame at once. The very singularity of its name attracted attention. Writers in the public press throughout the country made jokes about it, rendered it the butt of their wit, and because in the days of its founding there were many rude, wild, and woolly things occurring in the West, it was easy to hang them all on to the convenient peg called *Tombstone*.

In location, however, this is one of the charming cities of Arizona. It is on the lower and gentle slopes of the range of hills bearing the same name, affording a magnificent outlook over the Sulphur Spring and San Pedro Valleys, which are bordered by the wild, rugged and jagged peaks of the Dragoon Mountains.

The camp had its origin as follows: Early in the summer of 1878 a detachment of United States Soldiers were marching from Wickenburg to Fort Huachuca (pronounced *Wah-chu'ka*). They were accompanied by a prospector named Ed. Schiefflin, who was anxious to test the reports he had heard of rich ore deposits in the mountains of the region of the south. While the detachment was passing through the San Pedro Valley, Schiefflin took his burros and went up into the hills.

Hiding carefully from the Apaches, he succeeded in finding good ore. He returned to Globe, secured a "grub-stake," and located the wonderful mines that have yielded millions, and are now very likely to yield more.

In a couple of years Tombstone had a population of one thousand, and, later on, it is said to have grown to fourteen thousand. Quite a number of mines were in active operation and until 1890 they all remained as independent companies. But the organizing mind of Col. A. L. Grow saw the advantages of cooperation or combination, and for several years he worked to secure a combine of all the leading properties under one ownership. This was achieved in 1890 when the united mines were sold to the Tombstone Consolidated Mines Company, a subsidiary of the Development Company of America. For several years operations were very profitable. It was the big company of Arizona.

Then, unfortunately, a heavy inflow of water flooded the large mine, which for seven years retarded development and swallowed up $2,500,000 advanced by the parent company. This great drain was the chief cause of the downfall of the Development Company.

For years, as $1,670,716 of its notes were protested, the mine was in litigation. The town, with its wide streets and sidewalks, large business houses and residences, became almost deserted.

Several years previous to 1914 Col. Grow was appointed trustee in bankruptcy, and he succeeded in maintaining the property, and did the necessary annual assessment work upon about eighty unpatented claims held by the company, out of the proceeds of leases extended on the mine. On June 23, 1914, the property was offered at bankruptcy sale. For months before engineers had carefully examined the mine and all pertaining to it,

and it was expected that the bidding would be lively. But in this every one was surprised. Only one bid was heard. It came in a firm tone: "I bid $500,000." It was from Walter Douglas, general manager of the Phelps-Dodge interests in Arizona. The bid was accepted by the court, and work has ever since been prosecuted in the thorough manner expected of this great and successful corporation. Dr. Emil Grebe was put in charge, and prospecting was started on the upper levels, new spurs and increased trackage facilities were built, and the force of men slowly enlarged until now hundreds of men are at work, and ore valued at about $4.00 is being economically handled and treated.

The first mine located in Tombstone was called the "Ground Hog." It never amounted to anything. A second one, three miles away, was called the "Lucky Cuss," and did not belie its name. Its first assay revealed a value of ore worth $2,200 a ton, and a little later on, ore was taken out that assayed $9,000 per ton.

There were several mines located in the district before a name for it was chosen, and someone — with grim western humor — suggested Tombstone, and such it has been ever since.

It was a fairly wild camp in its early days, but not as rough as its neighbors Bisbee, Fairbanks and Charleston. Yet owing to the rude humor provoked by its name it attracted attention. One of its own newspaper men, a genius in the ruder kind of fun, started an occasional paper which he called the *Arizona Kicker*. This was quoted from all over the English-speaking world, and many an editor took it seriously, utterly failing to see the joke of it.

Then Alfred Henry Lewis came along, and with that weird, brilliant and vivid imagination of his made it

the scene of his "Wolfville Stories." That naturally added to its fame. In the meantime, the mine and mill were grinding out silver and gold which totalled up through the years until it is no fiction to assert that scores of millions have been taken from the Tombstone mines.

But it has not all been good fortune at Tombstone. Mines have their ups and downs as well as men, and Tombstone has been no exception. Though the Schieffflins and Gird sold their respective interests for a million dollars each, the purchasers ultimately, in going to deeper levels, encountered water which flowed in so rapidly as practically to drown them out. An immense pump of the Cornish type, with a great wooden pumping-rod, and a massive walking-beam that reared about thirty feet above the foundation was set up, and though similar pumps had done excellent service in Virginia City, Nevada, this was not found adequate to the work here, and the $300,000 of its cost was practically lost. When a fire destroyed the surface buildings of the mine the pump remained, and it was exposed to the elements for twenty-five years or more before it was finally dismantled and disposed of.

Litigation also has had its share in holding back the Tombstone mines, and for many years they were in the hands of a receiver. In June, 1914, the Phelps-Dodge Company bought the whole property of the Tombstone Consolidated Mine Company for $500,000. Work is now resumed, but in the most conservative manner. Yet the rejuvenation of the old camp has begun, and it will not be long ere it will hold an importance as striking as ever in the mining world.

But I venture a prophecy on a somewhat different line for Tombstone. It is directly on the Borderland

Photograph by McCullock, Phoenix, Arizona.

RUINS OF " WOLFVILLE," ARIZONA.

Highway — the great Southern Railway reaching from El Paso to Los Angeles. It is so picturesquely situated that thousands and thousands will be attracted to it as they ride across to or from California. They will desire to see the place of so much romance. A good hotel for the most exacting tourist travel will be erected and managed in the manner pleasing to the travelers' tastes. Meals will be served of the old Mexican and mining-camp dishes, but in fancy and *de luxe* style. The glory of the location and its incomparable surroundings will allure and keep people in the place. The climate will satisfy them, as it is delightful the year around, generally speaking. It is a natural health resort, and its water supply is the finest in Arizona. It comes from twenty-three springs in the Huachuca Mountains, twenty miles or more away, from an elevation of 6,100 feet. Tombstone is at 4,500 feet, so the water flows into its million-gallon reservoir by gravity and gives one hundred and fifty pounds pressure to the square inch so that no steam fire-engines are required in the city, the water naturally having more than enough pressure for all fire purposes.

The water system has a romantic history. In the 'seventies there was a well-known piano manufacturer in New York named Hale. He was in the habit of taking a trainload of pianos, ready to set up, to a city like San Francisco, with a number of his employees along, who would then set up the instruments. This novel method attracted many customers, and made Mr. Hale a great fortune which he loved to spend in acquiring mines, building railways, and purchasing real estate where he deemed future towns or cities would come into existence. He became interested in Tombstone, and was finally induced to put in the Huachuca Water System. He purchased enough lap-welded wrought-iron pipe in

Pittsburgh, Pa., shipped it by rail to Benson, and then had it hauled by ox-teams to where it was needed. These teams, as well as workmen who put the pipe in place were guarded by United States soldiers, to ward off attacks by the Apaches who were very hostile during this period. The remarkable fact about this pipe-line is that though it was put in in September, 1881, it has never had a leak yet. Its original cost was $558,000.

Looking across the valley from Tombstone one sees the forbidding walls of Cochise's Stronghold. Cochise was the leader of the Chiricahua Apaches, with whom Gen. O. O. Howard personally made a treaty in 1872. Sent out by President Grant with full power to treat with all the tribes and seek to bring them to peace he determined to find Cochise, if possible, and talk him over to a friendly relationship with the whites. He succeeded in finding Capt. Jeffords — a well known Arizonan who was formerly a superintendent of a division of the *Pony Express* that ran from California to the Missouri River. Jeffords was a personal friend, indeed a "blood brother" of the great Apache chief. By this is meant that they had sworn brotherhood, and sealed the oath by putting into their veins blood taken from each other. Before he died Jeffords asserted that Cochise had never once failed in his promises to him. Cochise in his earlier days was friendly to the whites. Then there came to Fort Bowie a young lieutenant, fresh from West Point. Soon after his arrival a white boy was stolen. The officer sent for Cochise and his leaders to come to his tent. He there told them of the theft, and finally accused the Chiricahua band of being guilty of it, and declared the five of them present his prisoners. Drawing his knife and cursing the officer, Cochise cut his way through the rear of the tent, zig-

Photograph by Courtesy of Dr. R. H. Forbes.

THE THREE TREATY ROCKS AT WEST ENTRANCE TO COCHISE'S STRONGHOLD, ARIZONA.

A PORTION OF COCHISE'S STRONGHOLD, NEAR TOMBSTONE, ARIZONA.

zagging his way up the hill behind to confuse the soldiers who were firing upon him. He escaped unharmed, but the following morning, looking down, he saw his four associates hanging, dead, victims to the wicked, unlawful and murderous fury of the scoundrel white officer, who had thus violated the laws of God and man. Cochise then and there vowed terrible vengeance, and swore that he would kill ten white men, women, and children for every one of his band that was slain. And only too well did he keep his word.

It was this chief, therefore, that General Howard was especially anxious of pacifying. At considerable risk Jeffords took him into the stronghold, where Cochise met him, made a treaty, *and ever after lived in full accordance* with it. When he died he was buried in the stronghold, though no white has ever been informed as to where his grave was. The site of one of his homes is now occupied by Mr. John A. Rockfellow and his family, and a visit to this romantic spot will form an epoch in the life of many a transcontinental traveler. Autos can now go directly to the Rockfellow residence, where saddle-horses and guides may be obtained for a ride over the trails to the different scenic features of the *Stronghold.* One of these is the *Treaty Rocks* — a place where it is said that the treaty between Gen. Howard and Cochise was made. Another portion, the Horse Pasture, is now owned by the Boquillas Land and Cattle Company, a corporation practically under the control of Mrs. Phoebe A. Hearst, the philanthropic helper of many needy and worthy students of the University of California.

Tombstone's first newspaper — *The Tombstone Epitaph* — was started by Col. John P. Clum, afterwards an Indian agent for the San Carlos Apaches, then a post-office inspector, and now an eloquent lecturer on the

wonders, beauties, and agricultural and other possibilities of the West; one of its earliest citizens was "Alec" Robertson, the genial publisher of the best works of California poets and others, in San Francisco, and "Papa" Bilicke, father of Albert C. who built the Hotel Alexandria in Los Angeles, was the builder of The Cosmopolitan, Tombstone's first good hotel. Each of these men could sit and talk by the hour of Apaches and their raids and slaughters, their devilishness or good points, the wildness, goodness and generosity of cowboys, miners, and soldiers; the wonderful luck of prospectors. To-day, when I can get hold of Col. Clum or Mr. Robertson, nothing delights me more than to hear them expatiate upon the Tombstone of early days.

CHAPTER XXXIII

PHŒNIX AND THE SALT RIVER VALLEY

When the ancient myth-maker conjured out of the depths of his vivid imagination the story of the phœnix, classic bird of the ancients prior even to his time, that it had the power inherently within itself to rise from its own funeral pyre, he little dreamed he was preparing a name for the Capital City of the last great State of the American United States. Unlike Tucson and Prescott, she was not born in the early days of strife, race-conflict, and the thrill of newly-discovered great mines. She is a sister of the later day. The first comers who roamed over the valley of the Rio Salado of the Spaniards, soon found scattered here and there the remains of a prehistoric people. Great irrigation canal systems led from village to village, and clearly indicated that a prehistoric race long before had seen and utilized the agricultural advantages of this highly favored region. So, when the settlers came together and decided to start a city, one of them, an Englishman familiar with his classics, suggested that as the new city of the new civilization was to rise on the ruins, the ashes, of a former civilization, he deemed Phœnix an excellent name. The suggestion was unanimously adopted, and Phœnix it became, and doubtless, ever will remain.

Elsewhere I have written of the dissensions that kept Tucson and Prescott in a turmoil for two or three decades over the location of the State Capitol. During

this time Phœnix was slowly growing in power and influence, and in due time the legislators outside the immediate field of the combatants decided to put an end as far as might be to the ancient quarrel by taking the prize away from each. And to help certify and cement that decision they erected a dignified and attractive State House of the gray tufa that has contributed so much to the fine residence sections of several Arizona cities. When freshly quarried it is quite soft and yields itself readily to the builder's designs, but soon after exposure it hardens and then rings like iron under the hammer.

Phœnix, unlike most leading Arizona cities, has not depended for its development upon the mining industry. It has had the steady growth of an agricultural city. Certainly the domain of which it is the proud mistress is a noble one. The Salt River Valley is known throughout the civilized world. There, according to the legends of the Pima Indians, the battles of life were fought out successfully by the *Hokokam* — the perished people — centuries before Columbus, and here, in due time, the white man came to face nearly the same conditions and problems, viz., a soil as productive as that of the Nile, a land of almost perpetual sunshine, an abundant supply of water in the mountains, and the rivers flowing therefrom, but — and it was this *but* that loomed so largely in the eyes of the settlers — no thorough, reliable, adequate method of conveying the water from the mountains and rivers to the soil, which, without it, was practically valueless.

Accordingly, the problem of the Salt River Valley resolved itself into one of irrigation, and many and varied were the endeavors to solve it. Dam after dam, canal after canal, were built. Company after company was organized, sometimes working in harmony, more often

in conflict, yet all attaining with more or less success the end desired. The first was the Salt River Valley Canal, in 1868; then, in succession, there came the Maricopa Canal, in 1869; Temple Canal, in 1870; San Francisco or Wormser Canal, in 1871; Utah Canal, in 1877; Mesa Canal, in 1878; Grand Canal in 1878; Arizona Canal, in 1885. In addition, the father of present Congressman Hayden, who had erected a flouring mill at Tempe, needed a continuous flow of water, and he filed upon the stream. Here were nine different and conflicting interests requiring water from the same source. There was bound to be friction, discontent, and open charges of injustice, improper use of water, etc., even in years when there was a full supply. In "short" years, the friction became open conflict. Lands, in this hot region, without water, were useless, but how much worse the case when lands upon which crops or fruit trees were planted, could secure no water. Then the situation became desperate, and there is no wonder that, without adequate storage facilities, the water users were in constant conflict. Litigation began, and once started, seemed never to cease, until in October, 1892, after prolonged study of the question, full examination of witnesses and documents dealing with the priority of filings and consequent rights, Judge Joseph H. Kibbey gave a judgment in which he determined the amount or proportion, of water to go to each canal company which laid claim to it.

But, as Chief Justice Kent of Arizona declared in his more famous decision, rendered in 1910, there was no effective attempt made to distribute water according to Judge Kibbey's decision. The result was further litigation. In the meantime a solution to the problem was being worked out by the National Government. To

supply water for all larger storage facilities were required which no private companies could provide. The work was so stupendous that the Government must undertake it. The need for this work had been agitated for years. Major J. W. Powell of the Geological Survey had been maturing plans, and finally, after a long campaign of education by democrats and republicans alike, the bill was passed, and it was the good fortune of Theodore Roosevelt to occupy the presidential chair when it came to the President to be signed.

One of the first great plans attempted by the newly organized U. S. R. S. (as the Reclamation Service soon came to be known) was the Salt River project. This implied the construction of a great dam which should impound the waters of the Salt and Tonto Rivers, and also of the Verde River, the latter feature of which meant the construction of a second dam at Granite Reef.

Practically 250,000 (a quarter of a million) acres were to be irrigated, and the water supply required was enormous. The history of the building of the Dam — a road having to be especially constructed over the mountains from Mesa to get to the site; the setting in operation of a great cement-mill for the making of the cement needed; is a romance in itself. Suffice to say, it was successfully accomplished, and as the water slowly backed up into its new reservoir and arose higher and higher, the site of the town of Roosevelt that had come into existence during building operations was entirely submerged, every outward indication of its existence having earlier been removed to a much higher site. Work on the Granite Reef Diversion Dam went on simultaneously with the work on the storage dam, so both were ready at about the same time.

But while this work had been progressing — even be-

The Roosevelt Dam and Reservoir, Arizona.

fore it started — it had been evident to those who were fully aware of the situation that something must be done to harmonize all the conflicting canal interests under one system, one control, and at the same time so enlarge the system as to make it several times more efficient in the irrigation of many thousands more acres of land. It was a gigantic task to accomplish, and called for administrative abilities of no mean order, abilities not surpassed by any general who had triumphed over his country's foes.

The administrative genius who accomplished this work was Louis C. Hill, at that time Supervising Engineer of all the reclamation work of the Government in Arizona, California and adjacent States.

In the doing of this, however, the Courts had to be called upon again, and intermittently, for two years and a half, testimony was taken as to the "duty" of water and the rights of some four thousand, eight hundred owners of, or locators upon, lands in the Salt River Valley. The decision was rendered by Chief Justice Kent, in March, 1910, a competent Water Commissioner appointed in the person of Frank P. Trott, who was not only to see that the decree was enforced, but was required to report to the Court regularly as to its practical working.

The great Roosevelt Dam was completed, the Government's comprehensive plan of irrigation adopted, and it is to-day in the hands of the "Salt River Valley Water Users' Association," under whose control it will remain — the governmental plan being that in time the whole original cost of the plant shall be returned to the Reclamation Service fund to be again used for a similar beneficent purpose elsewhere.

Does it need any gigantic intellect to prophesy what

the immediate result of the completion of this great work accomplished. Hundreds, thousands of acres sprang into cultivated life that hitherto had been the home of the lizard, horned toad, cactus and creosote bush. Farming and agricultural activities fairly leaped into vigorous life in a few months after they were started, for not only do " the lands of the sun expand the soul," they also expand the soil, and the seeds in the soil when supplied with an abundance of water.

Experiments had already been conducted by the State, on a large scale, to determine what would best grow in the different portions of this valley, and wise new-beginners were influenced by the practical advice of the scientists and experts.

Thousands of acres were planted in alfalfa. It is by far the most important crop. As one travels for miles by the side of these richly green fields he longs for an aeroplane that he may look down upon its refreshing beauty. All the grains, also, do remarkably well, and, being totally independent of rain, and there being no winter season, most farmers follow their grain crops with a second sowing of milo maize or corn, and thus two crops a year are obtained. Sorghum, and other fodder crops, do equally well. The result is the valley has become a great beef-feeding and dairy-farming country, where large returns are expected and made from every acre of land.

In few places in the world can dairy herds be pastured in the open on green alfalfa fields twelve months in the year. The importance of this fact to the dairyman can scarcely be over-estimated. Countless experiments have been made elsewhere to find the proper mixtures of various feeds that will bring the largest return at the least expense. Chopped dry hay, ensilage, various

Photograph by McCullock, Phoenix, Arizona.

CAMEL BACK MOUNTAIN.

One of the noted landmarks of the Salt River Valley, Arizona.

grains and grain mixtures, meal-cake, cotton seed, fodder of corn, cane and sorghum, cactus and alfalfa meal, etc., have all been tried with varying success. In the Salt River and Santa Cruz Valleys of Arizona most profitable results have followed the turning of the stock into the green pasture, generally dividing the fields into sections so that one unit is growing while another is affording pasturage.

The growth of the dairy industry will be comprehended from a moment's survey of the figures, January 1, 1915, there were 44,000 head of dairy cattle; January 1, 1916, this was increased to 53,000, and January 1, 1917, to 81,000, with valuations respectively of $3,256,000, $4,134,000 and $6,885,000. Thousands of calves of better breeding are coming along each year as the acreage increases and the demand grows greater. One condensing-milk plant is sending out two carloads of canned milk daily, and the demand far exceeds the supply.

But while alfalfa growing, cattle raising, and dairy-farming are profitable, they are by no means all that engage the attention of the Salt River Valley farmers. The Department of Agriculture in its Bulletin 235, shows the diversity and yet the continuity of its crops, as follows:

January — Oranges, grapefruit, lettuce, spinach, radishes, cauliflower.

February — Oranges, lettuce, beets, turnips, cabbage.

March — Strawberries, asparagus, carrots, green onions.

April — Strawberries and mulberries, peas, cabbage, lettuce, onions.

May — Strawberries, blackberries, plums, apricots, peaches, green corn, squashes, new potatoes, string beans.

June — Strawberries, blackberries, figs, plums, apricots, tomatoes, melons, peaches, squashes, cucumbers, onions.

July — Apples, pears, grapes, figs, peaches, sugar beets, cucumbers.

August — Grapes, figs, pears, almonds, peaches, chili-peppers, egg plant, beans.

September — Dates, melons, pears, grapes, pomegranates, peaches, chili-peppers, egg plant, potatoes, beans.

October — Dates, quinces, grapes, pears, apples, cucumbers, squashes, string beans.

November — Dates, olives, grapes, oranges, pears, strawberries, celery, lettuce, beans, squashes, potatoes.

December — Dates, olives, oranges, pears, celery, radishes, beets, lettuce.

This bulletin also gives verified records of the yields per acre in various localities in the Valley and near by, as follows: Alfalfa hay, 4 to 8 cuts per year, 6 to 12 tons. Alfalfa seed crop, 1 cut, 65 to 650 pounds. Barley, 1,800 to 2,500 pounds. Wheat, 1,500 to 2,400 pounds. Barley hay, 4 tons. Wheat hay, 3½ tons. Sugar beets, 9 to 19 tons. Potatoes, 3,000 to 15,000 pounds. Watermelons, 13 tons. Dates, 50 to 250 pounds per tree. Cabbage, 14,000 pounds. Onions, 5,000 to 20,000 pounds. Tomatoes, 10,000 to 27,000 pounds. Cantaloupes, 100 to 340 standard crates. Strawberries, 3,500 to 14,000 ¾-pound boxes. Egyptian cotton lint, 400 to 1,000 pounds. Indian corn, 2,000 to 2,800 pounds. Seedless raisins, 6,000 to 8,000 pounds. Oranges (young trees), one-half to 5 boxes per tree.

Fruits grow, ripen and are eaten fresh from the trees or garden every month in the year, not only in the Salt River Valley, but throughout all the southern portions of

Arizona. There are few countries in the world that successfully can make this claim. Drought has been banished by irrigation, and frosts are never so severe as to rob its horticulturist of his crop. To find a climate that is equable enough to grow both citrus and deciduous fruits is comparatively rare, yet both grow equally well in these favored regions.

In January the citrus crops are already largely in the market, for they ripen here much earlier than most of the California crops. The only places in the latter State where oranges ripen before Thanksgiving or Christmas are in the once desert regions of the Imperial and Coachella Valleys, or in the Sacramento Valley, five hundred miles north of the Mexican Boundary, but in Arizona only the later varieties wait until after the New Year. Early marketed fruit, when there is no competition, naturally brings a much higher price than when the market is flooded, and the prices received by Arizona growers are far higher than the average California prices, and only equalled by those paid for the fruit from the specially favored regions already named.

Washington navels, Valencias, Jaffas, Bloods, Kumquats and Tangerines are all grown, with the first named easily in the lead. In January, 1917, there were about twelve hundred acres in bearing, and of these fully one thousand acres were navels. The oranges produced are of delicious flavor, juicy, sweet, free from fiber, solid, thin-skinned, of excellent color, and absolutely free from all the pests that for years have so annoyed some of the California growers, and added to their producing expenses.

They continue to grow through February, March and April, while the later varieties are produced in April and

May. The pomelo, or grapefruit, also bears in these early months of the year, some of them being ripe and ready for market as early as October.

Hogs, sheep and poultry, also do wonderfully well, a great number of the former being fattened on the pulp that comes from the sugar mill. For the Salt River Valley possesses one of the rare sugar-mills of the world, in that it is kept at work throughout the year. Sugar is made both from beets and sugar-cane.

Sugar beets thrive well in the Salt River Valley, the climatic and soil conditions being conducive to good growth and large sugar content. But sugar-cane thrives equally well, hence, just about as soon as the beet crop has been handled and converted into sugar, the cane crop comes in, and thus the mill is kept almost continuously at work; a great advantage, as the plant is not compelled to be idle, as is the case where only one kind of crop is grown.

The latest development in the Salt River Valley on a large scale has been that of Egyptian cotton. This, as is explained elsewhere, has never been successfully grown in the South, though it is a most desirable species as its staple is longer, stronger, and finer than any other in the market, giving a larger yield per acre and securing the highest price. In March, 1917, the Arizona long staple cotton was selling for 58¾ cents *per lb.*, f. o. b. in Valley points, cash on delivery, and the supply nothing like equal to the demand.

In 1916–17 the Goodyear Rubber Co., realizing the value of this cotton, after repeated laboratory and practical tests, purchased eight thousand acres of land, south of Chandler, rented another four thousand acres near to Tempe, and have since bought another eleven thousand acres west of Agua Fria. With their immense capital,

at the time of writing (March, 1917), they are working an army of men and mules, with caterpillar engines, ploughs, etc., at clearing the land, leveling, putting in cement ditches, and putting in seed. They will plant one thousand acres this year, and in 1918 anticipate having the whole of their vast holdings planted to this one kind of cotton.

A special variety, called the Pima, has been developed in the Salt River Valley, and so wonderfully does it grow that it seems no wild vision to prophesy that the next few years will see the Salt River Valley one of the greatest cotton growing regions of the United States.

Hence, with such agricultural, horticultural, stock, dairying and other industries the Salt River Valley looks forward to a constantly developing prosperity. As the result of this prosperity such settlements as the noted suburb of the city of Phœnix, known as Ingleside, are made possible.

INGLESIDE

The "dream" of Ingleside was to make it a high-class residence town, the Pasadena of Arizona. At the time when he built the Arizona Canal that waters about one hundred thousand acres of the finest of farming land north of Phœnix, it was realized by the founder of Ingleside that there would come a time when there would be felt a need of some place in which to build nice homes and a town just to live in near Phœnix, and the site of Ingleside was selected as the most beautiful location to be found anywhere. Ingleside is situated on the divide between the upper and lower valleys, two hundred feet higher than Phœnix and just at the foot of that picturesque old mountain known to all as Camelback. On the south side of Ingleside lies the Sahuaro

National Park, comprising about four thousand acres which include the Red Buttes, a very beautiful and picturesque clump of red rock hills, making Ingleside enchanting in the beauty of its outlook as well as its location among the oranges and olives.

It was here at Ingleside that the first orange grove was planted in the Salt River Valley; Ingleside has also the Salt River Valley's oldest olive grove. It was on a site among the orange trees that the buildings of the Ingleside Club were set. This is a family club where many Eastern business men come with their families to spend the winter months. Some of these have built their own cottages and others rent cottages, or rooms in the clubhouse.

Phœnix, the capital and metropolitan city of Arizona, is only nine miles away, with roads that may be called excellent. The climate! Did not the success of the citrus fruits speak of that, for the ripened oranges were gathered and sold before the winter's frosts came that sometimes nipped the oranges of the sister State. The elevation was one thousand three hundred feet and perfect drainage was assured, a first-class domestic water supply was also assured; the Arizona Canal of the U. S. Reclamation Service — one of the largest irrigating streams in America — brings all the water needed for the ranches, and along its banks are enticing boulevards alluring the motorist and horseback rider to a forty-mile ride within momentary sight all the time of its cooling and refreshing waters. Half a mile away is Camelback Mountain, the scene of Annie Fellows Johnston's exquisite little story of *In the Desert of Waiting,* and where Robber's Roost and other noted spots suggest picnics, walks and healthfully invigorating exercise.

One winter I left New York in January where blizzards, snow, ice, sleet, and icicles had nearly frozen the marrow in my bones. I had seen hundreds, thousands, of men shoveling snow out of the streets into wagons, and had watched it hauled away and dumped into the river. I had been steam-heated in imagination — while I shivered in reality — and to such an extent of reality that the air of the houses, rooms, halls I entered seemed weighted down by the curses of the ages. I had suffered from the vile ventilation that artificial heat seems to engender, and shaking the snow from my hat and overshoes, throwing the latter out of the car window when we got fairly headed West, I breathed a sigh of content. I was going to the wonderland of God's choice climate — Arizona — the real, modern, western Garden of Allah. In a few days I reached Phœnix and was whisked out to Ingleside. There I shed all heavy underwear and outer clothes; dressed in the lightest possible suits, and went out bareheaded, morning, noon and night, in a climate that begged us to come out into the open. It sang to us, whistled to us, cheered, encouraged, stimulated, strengthened us. We soon began to feel the increase of the red corpuscles in the blood. The appetite became more vigorous, robust and easier satisfied, with that following perfect digestion that the city epicure, feeding on heavy and highly seasoned foods seldom knows. Sleep became more restful, more easily obtained and absolutely dreamless, and the morning awakening was to a richness of enjoyment, a sparkling exuberance of life that is equaled only by the linnet, the meadow-lark and the mocking bird.

Who would not enjoy such changes as this? And they are to be had by every man, woman or family of moderate means, either by purchase of Ingleside land

— of which there is a little left — or by a visit to the celebrated Ingleside Club.

This unique institution is the one that attracted the attention of that world-wide traveler, litterateur, and statesman, Sir Gilbert Parker. What resort was there in the four continents, five, if you please, that he had not personally seen or been made intelligently aware of? Absolutely none! Yet he came here, heard, saw and was conquered. He succumbed as readily as a lady does to a new gown that suits her in every conceivable way. He golfed, rode horseback, played tennis, went shooting, climbing and motoring, for as he says he found the climate "joyously good" "with days bracing and sunny and nights beautiful and serene."

He was charmed with the olive and orange groves that surrounded the club-house, and lived in happy, serene, contented peace, and when he looked upon the growing date palms, the Japanese persimmons, and a thousand and one flowering shrubs that spoke of the semi-tropical Orient, and then caught sight of that pure turquoise sky that is as much the natural possession of Arizona as it is of the Orient, all he needed was the singing of the bul-bul, famed songster of tradition, legend, history and poetry, to feel that he was in charming Arabia, Persia or India.

This institution, as its name implies, is indeed a family club, giving real home comforts to those who do not care either for housekeeping or ordinary hotel life. All the family, from the baby to grandpa and grandma, can be included in the membership. There are resident memberships for people whose homes are in Ingleside, Phœnix and nearby cities and towns and non-resident memberships are enjoyed by many distinguished and well-known people who live North, East and South.

INGLESIDE CLUB HOUSE, NEAR PHOENIX, ARIZONA.

There are rooms in the club-house for those who desire, and other members with their families occupy bungalows and cottages, which are ideally located in the orange groves.

Just as in one's own country home he grows his own vegetables and fruits, has his own chickens which supply eggs and broilers, and cows that give a superabundance of rich, pure milk, cream, butter and cheese, so does the Ingleside Club.

Just as one goes from his own home on family picnics, so he does here, for there are a score or more of the most charming, delightful, unique and romantic spots within easy distance, by motor or otherwise, of the club, and those who wish to drive daily can go for a month finding some new destination of peculiar interest each day.

Of course it is not necessary to state that this is not a sanitarium or health-resort in the ordinary and accepted sense of the terms. It is no more these, than a good, tender, well-cooked beefsteak, a chicken or finest vegetables and fruits are health-foods. They produce health of the highest order — that vibrant, tingling, radiant health, that makes every moment of life a joy and a delight. So is it with Ingleside. Within its borders are vigor, robustness, health and peace for the mere taking.

CHAPTER XXXIV

THE REALIZED MIRAGE — CHANDLER AND THE SAN MARCOS

EVERY desert traveler early becomes acquainted with that wonderful phenomenon of wide, unoccupied spaces and heated atmosphere, known as the mirage. What countless and deadly tricks has it not played upon the forgetful or unaware! What horrors has its fateful fascinations not induced! What lives has its cunning deceptiveness not lured to destruction! Yet in itself it is beautiful and attractive, and, when one fully understands the chimerical nature of its presentments, knows its unreality, yields not to its deceptive persuasiveness, believes not its promises that will never be fulfilled, it is as harmless as a baby's smile.

Mirages are as many and as varied as are men. There are thousands of different kinds or types. To merely attempt to suggest them all is impossible. A common form is where the shimmering sand and quivering atmosphere deceive the heat-exhausted and water-famished traveler into the belief that, just ahead, lies a lake of cool, delicious, refreshing water. How the parched lips long for it; how the dry tongue craves and prays for it; how the fainting steps awaken to new life under the stimulus of this wicked, cruel, deceiving lie! Yet were the traveler to be able to look upon it *as it actually is* — a remarkable natural phenomenon — he could enjoy its attractiveness and suffer no ill effects from its elusive and evasive deceptions.

ONE OF THE NEW TREE-LINED ROADS IN THE SALT RIVER VALLEY.
Near the San Marcos Hotel, Chandler, Arizona.

Then there are mirages of waving palms, tropical gardens, towering trees, stately palaces, wide-spreading fields of corn, of wheat, of barley, of alfalfa, where healthy and fat cattle graze in contented security. And, indeed, there is nothing that man has seen in actuality somewhere, but may be reproduced in this world of heat-distortion and mental mystification.

Was it a mirage that Dr. A. J. Chandler saw as he stood on the foothills of one of the great ranges overlooking the Salt River Valley? While other people saw nothing but long stretches of sandy waste, dotted here and there with palmillo, cactus, agave and creosote-bush, he saw green fields of alfalfa, farms, orchards, homes, the streets of a prosperous city, and in the heart of it all a gloriously beautiful building, not an oriental palace, with jeweled towers, sculptured minarets, and golden dome; not a Greek temple, adorned with masterpieces of Phidias and Praxiteles; not a Gothic Cathedral with towers and heaven-pointing spires; not a castle, ivy-clad and hoary, on the banks of romantic Rhine; not an old Jesuit or Franciscan Mission, with terraced tower and lantern, surmounted with the Christian symbol of salvation, but something that combined them all in one attractive building, embowered in orange and lemon groves, in peach and olive orchards, beautified and glorified by climbing vines, and rare, delicate and odorous flowers, with colors and tones of every hue from the purest whites, creams and blues to the vivid and flaming magentas of cactus and high-climbing bougainvillea. Here were arched corridors and long shaded walks, while within was a large patio, where palms, fountains, gorgeous-feathered birds and handsomely-gowned women of degree gave a life and reality to the scene far beyond that of most mirages. He saw stalwart men, gathered from

all the great cities of the continent, riding horseback, playing golf, and whirling to and fro in the most perfect of automobiles; trains running to the depot, long lines of freight cars waiting, while near by was a growing city, peopled by happy, healthy, prosperous families, where buoyant, merry children sang, and romped and played as he himself had done in his far-away Eastern home.

But this was desert. This could not be real. This must be one of those phenomena of nature he had heard of, read of, but never seen.

So he started to investigate. All investigations to be thorough, take time, and he was patient, and, moreover, had the scientific spirit. Locations were very clear in his mind. He went direct to where he had seen irrigating canals full of the life-bringing water, and fed by great pumps which were operated by electricity. Nothing there! A mirage? Maybe, but there was one thing only needful to make it a reality,— *man's energy* directed by man's will. This energy sprang into being just as the mirage had,— in a moment, in the flash of a moving mirror in the sunlight, and the will of man set in motion forces that soon brought the picture into actual existence. The canal led to the alfalfa fields; these to the herds of cattle. Elsewhere the orange and lemon groves, the peach, pear, plum, apricot, quince and nectarine orchards; the avenues of palms, the homes of men and women, sprang into life. One could hear the laughter and shouts of happy children mingling with the passionate songs of the birds as they sang to their nesting mates. Then, little by little, the mirage-palace came into actual existence. The corridors, the patio, the fountain, the tiled roof, and when it was completed it was not long before the crowds assembled and peopled it, and the

The Patio and Pergola, San Marcos Hotel, Chandler, Arizona.

fame of the San Marcos began to be spread abroad in the world.

Thus, in figures of speech, have I told the story of Dr. Chandler's building up of the thriving and prosperous town that bears his name and of the one unique hotel of the State — the caravanserai on the whilom-desert that is to Arizona what Frank Miller's Glenwood Mission Inn is to California; a gathering place for men and women of refinement, used to luxury, yet appreciative of those larger and finer things that deserts, not cities, afford.

Located twenty-three miles southeast of Phœnix, it is no figure of speech to say that here the desert and civilization clasp hands. For scores of miles one's eye falls upon a landscape of the most perfect cultivation in the world, where everything — from finest Nile cotton and Persian date-palms to Norwegian pine and Sierra-tamarack — grows, while, on the other hand, or beyond, lies cactus-land, where the giant sahuaro, mesquite, smoke-tree, chilopsis and creosote-bush lead the eye to mountains of purple shadows, of snowy crowns and tree-clad slopes.

It is no longer necessary to recount, as in a merchant's inventory, the items that go to make up the perfection of the San Marcos. It has them all, with that rare something that one finds only in this desert region. Granted that it is a reclaimed desert — it is still desert in most of the things that make up the great allurement. In addition, however, the fine roads of the Salt River Valley give the San Marcos guest easy and ready access to scenes of antiquity, archæology, ethnology, romance, tradition and history that the whole of these pages are an inadequate endeavor to set forth. Suffice it to say, that one can visit Cliff-Dwellings, the historic Casa

Grande ruins, painted caves, pictured rocks, Pima, Papago, Maricopa, Yaqui and Apache Indians; the Franciscan Missions of San Xavier del Bac and San José de Tumacacori; the old presidio of Tubac from which Don Juan Bautista de Anza took the colonists who founded the city of San Francisco de Asis, the great city by the Golden Gate; the ancient mines of the Santa Rita Mountains made not more memorable by tradition of Jesuits and Spaniards and the horrible attacks of revengeful Apaches, than by their later yield of the precious metals; the more modern mines of Tombstone, Miami, Globe, Ajo and Jerome and the smelter city of Douglas; the world-famed Apache Trail with its rugged picturesqueness and fascinating legends of the warlike Indians after whom it is named, and its equally wonderful Roosevelt Dam; while to the east are the glorious White Mountains, and to the north the Petrified Forest, the Lava Fields, the Grand Canyon, Havasu and Wallapai Canyons where live the Indians of the same names.

The San Marcos is individualistic in several ways, but in no way more so than in its possession of Bill Huggett. Bill is a genuine product of the desert, the trail, the mountain, the canyon, the rodeo and the forest. Like the Grand Canyon, the Huachuca, the Apaches and the Petrified Forest, he belongs here. You can't picture him anywhere else. And a few years ago Bill hit upon the happy idea of giving to the people of cities, used only to the sky-scraping mountains, the deep abysmal canyons, and the populous deserts built and made by man; to people who have lived all their lives to the hysterical tittering of electric bells, the brassy honk-honk of automobiles, the clangor of locomotive bells, the rattling din of surface and elevated cars, and the screech of their wheels on the rails; to people who never drew a pure

draught of desert-purified, mountain-cooled air in their whole existence, whose horizons have ever been limited by the box-like structures of streets — I say, Bill hit upon the idea of giving to such people a little of the camping-out life of the desert that made such fearless and athletic warriors of the Apaches, and that has put red-corpuscles again into the blood of many a man and woman rapidly dashing grave-ward, and with a specially-equipped camping-out wagon, tents with canvas floors, comfortable cots, cooking-outfit that enables him to supply every reasonable and unreasonable demand, and with saddle horses for those who want to ride he starts out for a day, a week, a month, or six, as the parties that engage him desire. Not a place described in these pages but Bill will take you to — and, remember, not only is he guide and provider, but also wise mentor and friend. He is the sage of the sage-brush. the philosopher of cactus-land, the poet of the land of purple shadows, and he or she who is fortunate enough to find Bill disengaged and secures his services has started an epoch in his life never to be forgotten.

These are some of the things that the San Marcos has to offer, but the most important are the things that cannot be put upon paper, the atmosphere of the place, the homeyness, the genial characteristics of the builder and owner, and of Mrs. Robinson, the manager, the congeniality of the crowds that assemble year after year.

Is it any wonder that already the hotel is much too small for its needs; that additional wings and bungalows are going up and that families who never before have lived in what one might call temporary quarters, find themselves so happily situated that they remain for the whole winter season, and that a year ahead of time half, three-fourths and even more of the accommodations are

bespoken? No one, however skilful in the use of words, can describe the San Marcos and Chandler. It is a blissful condition, a state of mind to be personally tasted and thereafter forever continuously enjoyed.

ON THE SAN MARCOS GOLF LINKS, CHANDLER, ARIZONA.

CHAPTER XXXV

NOGALES AND SANTA CRUZ COUNTY

ARIZONA is a land of surprises — in its Grand Canyon, Petrified Forest, Snow-Clad Mountains, Pine Forests, Wild Game, Fishing, Flowers, Birds, White Mountain Region, Canyon de Chelley and the rest. But it is not to these natural objects alone that its surprises are confined. Some of its cities are a great surprise, and one of these is Nogales, the capital of Santa Cruz County. On the border between the United States and Mexico, most Americans think of it as a Mexican city, tumble-down, dirty, lazy, unprogressive and possessed of the spirit of *mañana* and *poco-tiempo*. It is indeed in the land of "to-morrow" and "in a little while," but the spirit of active progressive Americanism has taken full possession of it. You feel this — see it — even before the trains of the Southern Pacific Company deposit you at the depot, fifty yards this side of the line. For, as you enter the environs of the city, you see a great water-reservoir, magnificent Court House, High School, Grammar School, City Hall and, on the hillsides, street after street of beautiful residences, where trees, shrubs and flowers of a hundred, a thousand, varieties lend added beauty, and fine lawns fill the eye with their refreshing green. At the depot itself, a band-stand in the heart of a beautiful park, where there are many more fine trees and exquisite flowers, combined with a large pool of the rarest lotuses, lilies and other aquatic plants, give a new surprise.

The location of Nogales is picturesque in the extreme; the history of its being situated where it is is quite romantic. Prior to the building of the Southern Pacific branch line from Benson to Guaymas, Calabasas — an old time mining-camp — was regarded as the chief city of the region. It is ten miles north. But on the completion of the railway a city was needed on the line, and, as rapidly as if a fairy had waved a magic wand, Nogales came into existence.

The arroyo winds its way through a number of rolling hills. On and about these the city is built. The small fields and gardens were first cultivated on the lower levels and homes sprang into existence near by; then, as the city grew, the later comers built their homes on the slopes of the beautiful hills, with small canyons before and behind them. For health such a situation is ideal, as there is the most complete drainage and, in addition, the breezes that come from the snow-crowned mountain summits, which greet the eye in almost every direction, bring purification, health and coolness on their wings. Sanitation is assured by a modern sewer system recently completed.

The water system of the city is perfect and complete, coming from the gravels of the underground flow of the Santa Cruz River, and, being pumped to the top of one of the highest hills, it affords more than ample protection against fire.

The general elevation of the city is about thirty-nine hundred feet above sea level, hence it has a temperate climate the year around. Surrounded by mountains in every direction, towering nine thousand feet and even higher into the perfect blue of the sky, they give a charm to the city's surroundings, besides affording cool, aromatic breezes from their snow-crowned summits and

THE DIVIDING LINE BETWEEN MEXICO AND THE UNITED STATES AT NOGALES.

The sentry to the right is in Nogales, Sonora, Mexico, and the one to the left is in Nogales, Arizona, United States.

pine-clad slopes during the summer months of the year.

There being a great number of profitable mines and many prosperous cattle ranches in the region of Nogales, both in Santa Cruz County and in Sonora, Mexico, the fortunate owners and their families have made Nogales their home city. They have built many most charming residences, thus making large and welcome additions to the city's best kind of population. The children of these homes have called upon the school trustees for the best there is in education, and the result is the erection of fine school buildings, doing as good work as can be found anywhere in the State.

The rolling hills upon which much of the city is built afford natural outlooks of commanding beauty, and advantage is now being taken of these to construct a fine city boulevard, winding in, out and around the heads of the ravines, up and down the gentle slopes, thus offering panorama after panorama in rapid succession as one looks first in one direction and then the other.

Being directly upon the boundary line, there is one wide street, on one side of which is Mexico, on the other the United States. A trip to the other side is always interesting and illuminative. Here stands the soldier of Uncle Sam in his neat, well-fitting, olive-colored uniform, trained and disciplined to a true soldier-like bearing. Fifty feet away stands the Mexican soldier, ragged, unclean and unkempt, as if typifying in himself the present state of his unhappy and unfortunate country. Here is the market to which vegetables and fruits of every kind from the wonderful storehouse of Sonora are brought. In normal conditions, this one market is a revelation of Sonora's future possibilities, which the ordinary American has never conceived. Then, too, he will be surprised to see the fine new school building

erected on the Mexican side, showing the earnest desire some of the leaders of Mexico have in the educational advancement of their children.

Historically, this is one of the most interesting portions of Arizona. Nogales was the natural gateway through which the old Spaniards came into the Santa Cruz Valley — first the missionaries and then the miners. When one thinks of that great burst of religious enthusiasm which took possession of the Spaniards soon after America was discovered he cannot help but be amazed at its power and fervor. Was there ever known a greater religious movement than that which sent Jesuits, Franciscans and Dominicans in a perfect flood over the whole of the newly-discovered America? Mexico, the Central American countries, Peru, Brazil and all the populous South American countries felt the power and thrill not only of the gold- fame- and power-lustful *conquistadores* but of the passionate devotion to God and heathen humanity manifested by the followers of Ignatius Loyola, St. Francis, St. Dominic and other fathers of the Catholic Church. One of the chief of these was a German by birth, named Kuhn. At Hala he was taken seriously ill, and when supposed to be at the point of death made a vow to his patron Saint, Francisco Xavier, that should he recover he would devote the rest of his life as a missionary to the Indians of the new lands. Unlike many who make such vows, he was desperately in earnest and therefore, when he arose from his sick bed, he immediately proceeded to carry it out. Declining a professorship offered him by the college at Ingolstadt, he crossed the Pacific and, having entered the ranks of the Jesuits, was put in charge of the religious portion of the expedition of Admiral Isidro Otondo y Antillon, which, in 1683, started to take active possession of Lower

California. On their arrival at La Paz a church was erected, and Kuhn, now known by the Spanish as Eusebio Francisco Kino, at once set about learning the Indian language. In a short time he had mastered it sufficiently to translate into it the creed and other religious instruction and was actively engaged in the Christianization of the natives when an eighteen months' drought led the Admiral to abandon the place and return to Mexico.

In the meantime another zealous missionary was being raised up for this work. Padre Juan Maria Salvatierra, the Visitor-General of the religious houses of Sonora, appointed Kino as his traveling companion. As they journeyed, Kino poured into his superior's willing ears his plans for the conversion of the California savages. The results of these conversations ultimated in the raising of the famous Pious Fund of the Californias and the establishment by the Jesuits of the Missions of Lower California. All this planning, however, for California, did not prevent Kino and his superior from looking after the interests of the Pimas in the land through which they were then traveling. They came over the divide into the Santa Cruz Valley as far north as Tumacacori, the first recorded expedition into Arizona from the south since the time of Coronado.

The following year (1692) Kino came north again, reaching as high this time as the important Pueblo of Bac and where later, 1700, he established the Mission of San Xavier on the site where the magnificent church of that foundation now stands.[1]

In November, 1694, he made the trip on which he discovered the Casa Grande on the Gila River, of which he left a most interesting and accurate description.

[1] Bancroft asserts that there was no resident Jesuits in Arizona in Kino's time, but Bolton, *Spanish Explorations in the South West*, p. 449, footnote, shows that this was a decided error.

In December, 1696, and several times in 1697, with an eye to the founding and supporting of future missions, he came into the valleys of the Santa Cruz and San Pedro and began the establishment of stock ranches. He was indefatigable and as practical as he was enthusiastic and heavenly visioned. Missions must be established but they must be provided for. In spite of the unfriendly outlook, with little to cheer him, with the prospect of probable martyrdom before him, for he was already learning the hostility of the Apaches, he resolutely and courageously kept on with his work until San Francisco Xavier del Bac was established and the Missions also of Guevavi and Tumacacori in the Santa Cruz Valley — which he named the Valley of the Santa Maria. On each side of Guevavi another Mission was later established, one dedicated to San Cayetano and the other to San Luis de Bacoanos. The ruins of the Guevavi Mission are almost gone, though they are still traceable.

In 1699, Kino, with the Visitor-General Antonio Leal and Fray Francisco Gonzalvo, came north, visiting the Sonora and other missions, crossing into Arizona as far as San Xavier (this was the visit when the Mission was founded) and San Agustin del Ayaut, north of where Tucson now stands. The visitor was so impressed with the Missions that in 1701 he sent new missionaries, Juan de San Martin to Guevavi, with San Cayetano and San Luis as visitas, Francisco Gonzalvo to San Xavier, Ignacio de Yturmende to Tubatama and Gaspar de los Barrilas to Caborca.[1]

[1] This date of the founding of San Xavier del Bac is given authoritatively upon the personal memoirs of Kino, discovered by Bolton in Mexico, now being edited, let us hope, for *speedy* publication. This sets at rest a much discussed question.

The Mission of Tumacacori does not appear to have assumed any particular importance until after 1767, the year when the Jesuits were expelled and the Franciscans took their places in the Santa Cruz Valley.

Fray Juan Gil de Bernave was sent to Guevavi and the Mission appears now to be renamed, as it is spoken of as Santos Angeles. Connected with it as *visitas* were San José de Tumacacori, San Cayetano de Calabazas, and San Ignacio de Sonoitac. There was no church at Calabazas and the others were poor. Tumacacori was one league from the presidio of Tubac and it had adobe houses for the Indians and some walls of defense.

In 1772 Fray Antonio Reyes reported Tumacacori as having a church and a priest's house, *both empty,* and a population of ninety-three.

We now come to an interesting epoch in the history of Arizona. The captain of the presidio of Tubac was Don Juan Bautista de Anza. He had been strongly opposed to the missionary journeys of Garcés, but now he was about to avail himself of the information the padre had secured. He asked for permission to report on the feasibility of opening a road between the missions of Sonora and the newly-founded establishments of California that would facilitate communication between them, and avoid the arduous and somewhat dangerous journey across the Gulf of California from the mainland, and the long march up the peninsula of Lower California. The Viceroy gave the required permission and ordered Fray Garcés to accompany de Anza. Accordingly, Tubac became the scene of great preparations, and on the eighth of January, 1774, the expedition started. For a full account of this memorable trip and its consequences one must read the history of California, and especially the work upon de Anza's founding of San

Francisco, by the Golden Gate, written by that sincere student Zoeth Eldredge and entitled *The Beginnings of San Francisco.*

Suffice it here to say that the expedition was successful, the road assured, and in due time de Anza was authorized to collect the necessary number of colonists, soldiers, cattle, etc., needed for the founding of San Francisco. At the same time preparations were to be made for the establishing of two new missions, to be conducted on a different plan than the paternal one hitherto followed, to be placed at suitable sites on the Gila and Colorado Rivers. Both projects, in due time, were carried out, the former to the great glory of the Pacific Coast, the latter to the disaster of all concerned. San Francisco was duly established to become one of the wonder cities of the world, while the two missions, after several vexatious delays, were founded near the place where the city of Yuma now stands. Proper precautions were not taken for the guarding of the missions and the consequences foretold by Garcés actually accurred. The Yumas had been led to expect much at the hands of the Spaniards. In this they were disappointed. The settlers violated the first law of anything like friendly association between themselves and the Indians by taking possession of the best field and pastures, and in many other ways irritated where they should have conciliated.

In June of 1781 Don Fernando Rivera y Moncada, military governor of California, arrived at the Colorado River Mission of Concepcion from Sonora, and sending on ahead nine of his men, under Ensign Alferez Simon, to the Mission of San Gabriel, himself settled down to rest and recuperate for some weeks ere he renewed his journey. It was a fatal rest. On the 17th of July, the accumulated anger of the Yumas burst upon the men

they regarded as interlopers. Frays Garcés, Barraneche, Diaz, and Moreno were slain, as were also Rivera and his soldiers, and thus the new experiment concluded.

The general disturbances between Mexico and Spain, and within its own borders, seem to have affected most seriously the later welfare of the Arizona missions. At Guevavi, as we have seen, in 1769, the Apaches attacked the Mission in midday, and it was not until about 1791 that it was completely repaired, a new roof being put on at that time. Yet in 1784 it ceased to be a Mission, the padre in charge removing to Tumacacori, which from that time on became the more important station. Here a new church was built in the beginning of the nineteenth century, but it was not completed until the year 1822. This is the church now made into a National Monument, and in the sadly ruined and dilapidated condition on the west bank of the Santa Cruz River, between fifty and sixty miles south of Tucson. Fray Baltazar Carillo was stationed at Tumacacori until 1798 or 1799, when he died and was succeeded by Fray Narcisco Gutierrez, who lived until 1820. Then Fray Ramon Liberos took charge, but how long he remained is not known, nor whether he had a successor.

Although Tumacacori has been duly declared a National Monument by executive proclamation, it occupies a rather anomalous position. Prior to United States occupancy of New Mexico and Arizona a member of the Baca family was given a grant, the location of which, however, was not specified, and which he was empowered to make at his own will. This grant he finally located in the Valley of the Santa Cruz, covering many thousands of acres and including the site of the Mission of Tumacacori. The grant was questioned, however, and taken into the United States Courts, which lately have

decided the case in favor of the Baca heirs. The active citizens of Nogales, therefore, are now seeking to obtain from these a grant to the United States government of the mission lands so that the building itself may be cared for, as, by departmental ruling, it is contrary to the policy of the Government to spend any money upon any object, no matter how worthy, the title of which is not vested in the Government. As soon as this can be accomplished endeavors will be made to put the Mission in a state of repair and protect it from the further ravages of the weather.

It has already become one of the popular places of interest to visitors both of Nogales and Tucson.

To return now to Kino. He still looked with longing eyes on other parts of Arizona. He hoped to Christianize the whole of the Apache nation, and to reach again as far north and west as the Hopis, and east to the Zunis. His zeal knew no abatement, his fervor no reduction, his labors no respite. Yet his eyes were ever alert to the meeting of material needs. He was no fanatical visionary, but essentially practical.

For instance, here is what he says of the temporal means and opportunities "Our Lord offers" for aid in the work:

"The greater the means the greater our obligation to seek the salvation of so many souls in the very fertile and pleasant lands and valleys of these new conquests and conversions. There are already rich and abundant fields, plantings and crops of wheat, maize, frijoles, chick-peas, beans, lentils, bastard chick-peas, etc. There are good gardens, and in them vineyards for wine for masses, with reed-brakes of sweet cane for syrup and *panoche,* and with the favor of heaven, before long for sugar. There are many Castilian fruit-trees, as fig-trees, quinces, oranges, pomegranates, peaches, apricots, pear-trees, apples, mulberries, pecans, prickly pears, etc., with all sorts of garden stuff such as lettuce, onions, leeks, garlic, anise, pepper, mustard, mint, Castilian roses, white lilies, etc., with very

good timber for all kinds of building such as pine, ash, cypress, walnut, china-trees, mesquite, alders, poplar, willow, tamarind, etc.

"Another temporal means which our Lord gives us for the promotion of these new conquests are the plentiful ranches which are already stocked with cattle, sheep, and goats, many droves of mares, horses, sumpters, mules as well as horses, pack animals necessary for transportation and commerce, with very rich and abundant pastures all the year to raise very fat sheep producing much tallow, suet, and soap, which already is made in abundance.

"The climate of most of these new lands and new conquests where the promotion of these new conversions is asked, is very good and pleasant, and somewhat similar to that of Mexico and to the best of Europe, with neither too great heat nor too great cold.

"In these new nations and new lands there are many good veins and mineral lands bearing gold and silver; and in the neighborhood and even in sight of these new missions and new conversions some very good new mining camps of very rich silver ore are now being established."[1]

It will thus be seen that there is good foundation for the stories that have come down to us of the richness of the mines found in or near the Santa Cruz Valley. Indeed, it was included in the famous *Tierra del Nayarit,* which Humboldt pronounced the "treasure house of the world."

Kino's letters and reports soon brought the gold-seekers into this favored region. To this day extensive abandoned mine-workings may be found, and tradition tells us of several mines which gave large returns even with the crude and primitive methods of two or three hundred years ago. Among these is the famous Las Plancha de Platas, situated in Mexico about twenty miles southwest of Nogales. This was discovered and worked soon after the Jesuits came into the Santa Cruz Valley, say in 1739, and was rich enough to satisfy the cupidity of the most grasping. That it was not a permanent mine is evident from what we know of its history.

[1] *Relation of Father Kino,* in Bolton's *Spanish Exploration in the South West,* Scribner's, 1916, pp. 457-8.

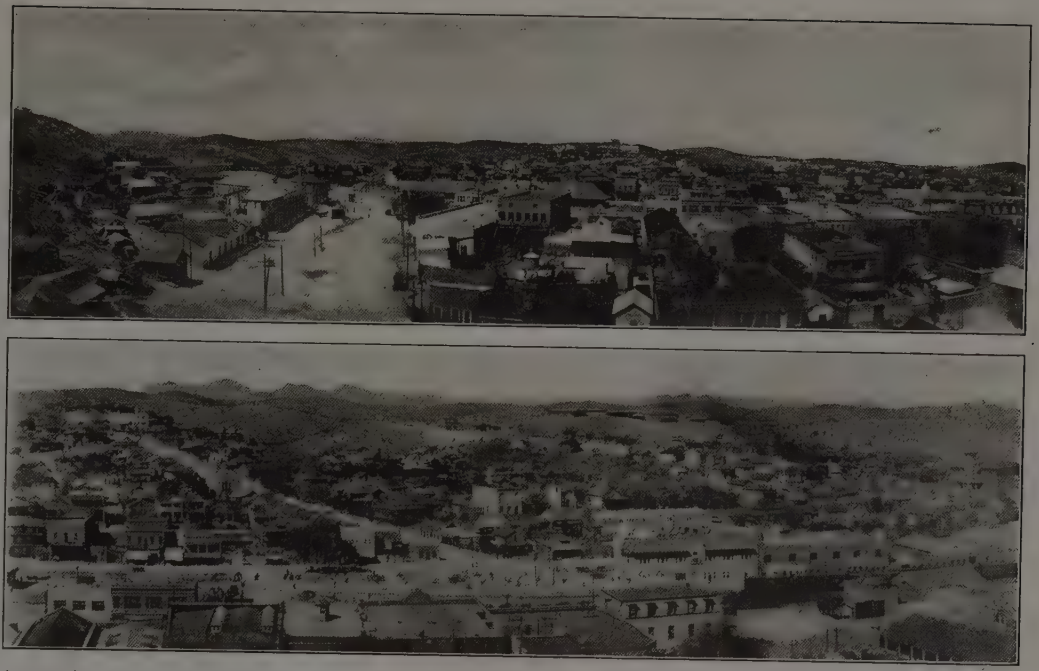
Owing to its early productiveness the Crown of Spain coveted it. This we learn from Henry Howe, a well-known writer on metallurgy. He asserts that in comparatively recent times, the attention of the Mexican government was called to this deposit, and the records were searched for the correspondence that was said to have taken place between the king and the owners of the mine. Howe continues — as quoted in *Hinton's Handi-book to Arizona:*

"This correspondence I have seen, and I have in my possession a certified copy of a decree of Philip the Fifth, dated Arranguez 28th May, 1741, the object of which was to terminate a prosecution instituted by the Royal Fiscal against the discoverers of Arizona, for having defrauded the treasury of the duties payable upon the masses of pure silver found there. The decree states the weight of the balls, sheets, and other pieces of silver discovered (bolas, planchas, y otras piesas de plata) to have amounted to 156 arrobas in all (4,033 lbs.); and mentions particularly one mass of pure silver which weighed 108 arrobas (2,700 lbs.); and another of eleven arrobas, upon which duties had been actually paid by a Don Domingo Asinendi, and which, as a great natural curiosity (como cosa especial) the King states ought to have been sent to Madrid.

"The decree ended by making the district royal property, and directing the mines therein to be worked on royal account — a step which had, naturally, the effect of destroying all private enterprise."

In 1817, it was again taken possession of, but the Apaches gave the new owners much trouble, and nothing much was done with it. In 1878 its modern history began. It has been continuously operated since that time, one of its recent owners realizing as much as $1,500 per month from it. It now has a large amount of low grade ore ready for the mill as soon as one is built at Nogales with capacity for handling it, for it can supply five hundred tons a day for an indefinite period.

Another historic mine was the Salero, or salt-cellar, the location of which is well known in the Santa Rita



(UPPER) NOGALES, SHOWING THE STREET THAT DIVIDES THE AMERICAN FROM THE MEXICAN PORTION OF THE CITY. (LOWER) GENERAL VIEW OF NOGALES, ARIZONA.

Mountains. It is said to have gotten its name from the following incident:

On the occasion of a visit from the Bishop of Sonora to Tumacacori, the good father in charge of that establishment furnished, as in duty bound, the best entertainment for his superior that his limited resources would allow. The Bishop was delighted with the sumptuous feast laid before him; the chickens, the fruits, the wines were all excellent; there was only one thing lacking to complete his temporal happiness, a salt-cellar! The poor Padre was deeply mortified; he had forgotten all about the salt-cellar; in fact, had long since forgotten the use of such luxuries. Salt-cellars were as scarce in Arizona then as they are now. "Never mind!" said he, as a happy thought struck him, "your Excellency shall have a salt-cellar to-morrow." A few trusty men were dispatched to the Santa Rita Mountains, with orders to dig and smelt some silver ore and make a salt-cellar, and sure enough, by dinner-time the next day a massive salt-cellar was presented to the Bishop, and from that day forth the mine out of which the ore was dug was called the Salero. History does not record, but there can be little doubt that the worthy Bishop of Sonora enjoyed his dinner at Tumacacori.

Another old and famous mine was the Patagonia, also known as the Mowry. This is situated about ten miles above the Mexican boundary in Santa Cruz County and is now included in the Coronado National Forest.

Patagonia, a few miles north of the mine, and the second largest town in Santa Cruz County, is the shipping point for the Mowry and for many other important mines in its vicinity. The Mowry was no doubt one of the mines known to the Spaniards and Mexicans, but Americans re-discovered it in 1858, and in 1860 it was purchased by Sylvester Mowry, a man who made deep impress upon Arizona in those early days. He had been a lieutenant in the United States Army, had commanded the post at Yuma but was retired. It was a source of great disagreement and expense to its original owners but Mowry finally became owner of four-fifths of it, gave it his own name and operated it with a fair degree

of success. Browne said the lode appeared to be large, bold and well-defined and the ore of fair average richness. On the occasion of his visit, it was yielding about $35 to the ton, though Küstel, the distinguished metallurgist, after careful examination the month before, reported that a general average of $50 to $70 to the ton might be obtained. But owing to the Civil War, Mowry got into difficulties with General Carleton, who ordered him imprisoned and the mine seized under the Confiscation Act. Though ostensibly under arrest at Yuma, Mowry was so well liked that he suffered little hardship. Investigation by General Wright later secured his release but in 1868, Mowry collected about $40,000 damages from the Government and went to London, where he died. This mine is now in the Harshaw District and is being regularly worked by the Standard Metals Company. The main shaft is down over six hundred feet.

In this same district the old Hermosa mine is located. It is still being worked most profitably.

Other mines at present in successful and profitable operation are the Duquesne, World's Fair, Three Rs, Trench and several others in the Patagonia Mountains; the Pinal, Alabama Queen, Wandering Jew and others in the Santa Ritas; and the Montana Mines in the Oro Blanco region, not far south of the location of the historic Heintzleman Mine.

Over in Sonora, Mexico, in the Magdalena district, are many rich mines.

The Sonora Mining and Exploration Company was instrumental in calling much attention to the mines in Santa Cruz County in the early days. Its President was General S. P. Heintzleman of the United States Army and its principal mine was named after him. The company was organized in Cincinnati, in March, 1856,

and, as its name implies, it was for the purpose of exploring and working the old mines of northern Sonora. Charles D. Poston, a born adventurer and promoter of the higher type, was at its head as the practical man of affairs in the field. With him went J. Ross Browne, in 1863, to look over the properties of the company, and to that trip we owe the fascinating narrative, *Adventures in the Apache Country,* published in *Harper's Magazine* and, later, in book form. The chief operations were confined to the region around Tubac and Arivaca and though some of the ores sampled as high as $1,000 per ton the gross value of all the ores mined in 1860 totaled only $90,804. The first run of bullion from Heintzelman and Arivaca ores, made in 1858, was from a small mud furnace that cost $250. It took six hundred hours to smelt about 22,800 pounds of ore, from which were secured 2,287 ounces of silver and 300 pounds of copper, no mention being made of the lead. German experts later came and suggested the Freiberg system of barrel amalgamation, which was later used.

These are but brief references to the mines on the Arizona side of the line. But Nogales is the Border City and is the Gateway to the south as well as to the north. Here the main line of the Southern Pacific goes on down to the West Coast of Mexico, through the wonderfully rich mining territory of Sonora and Sinaloa, and on through Tepic, from where it is necessary to construct less than fifty miles in order to connect up with the railroads running into Guadalajara and the City of Mexico.

With the completion of this short link, Nogales will be the Port of Entry on a great railway line extending from the Pacific Northwest to the City of Mexico, the

Mexican portion of which line is richer in scenic beauty and intersects a region of greater resources than any other in Mexico.

Thus its opportunities are great, its mining territory is immense and the same may be said of its cattle country, for the same area is one of the most famous cattle regions of Mexico and Arizona.

But Santa Cruz County is now awakening also to the full value of its agricultural resources. The great number of operating mines, as well as the city of Nogales and other neighboring cities, are demanding quantities of fresh fruit, vegetables, legumes, and forage crops, which the region can well supply. Over five hundred American farmers have come to this county and established themselves in the rich valleys within the past five years. The Valley of Santa Cruz, second in Arizona only to the Salt River Valley in productiveness, is about to come from under the shadow of a land-grant litigation of many years' standing and, with the establishment of clear titles, its development will be wonderful.

However, hundreds of acres already are under successful cultivation, showing its great possibilities with the full development of its water resources.

Santa Cruz County is well provided with roads, it being on the magnificent Borderland Route (a loop thereto recently established) which connects Bisbee and Douglas with Tucson. Passing over plains and through mountain passes by historic forts, camps, mines and villages, it reaches Nogales, then down the Santa Cruz Valley, directly by the old Mission of Tumacacori, the Presidio of Tubac, the historic Revanton ranch-house, by the Mission of San Xavier del Bac to Tucson.

Climatically the region is one of the highly favored

districts for which Arizona has already become world famed. One neither roasts, fries, bakes, or frizzles in summer nor freezes, crystallizes, or solidifies in winter. Hence it is perfectly adapted for the residence of the most delicate as well as the rugged and robust.

The fact that it is on the border has led the Government to provide adequately for its perfect protection in the future. Permanent quarters are being established for an adequate number of soldiers of both infantry and cavalry with a full complement of the artillery.

Hence with its great opportunities for business in so many profitable and diversified channels, its healthful location, its delightful climate, its progressive community, growing in all of the finer things of life as well as in commercial competency, there are few cities in the West that afford equal, much less superior, advantages to Nogales, the county seat of Santa Cruz County and the Key City to the wonderful west coast of Mexico.

THE END

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